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Published every Thursday Morning by David Williams, Nos. 96, 98, 100 & 102 Reade St., New York.

Vol. LI: No. 19.

New York, Thursday, May 11, 1893.

\$4.50 a Year, including Postage.
Single Copies, Ten Cents.

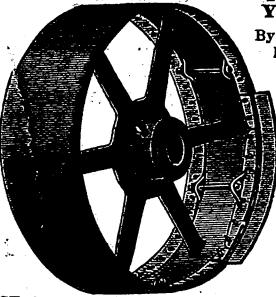
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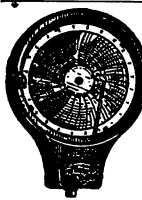
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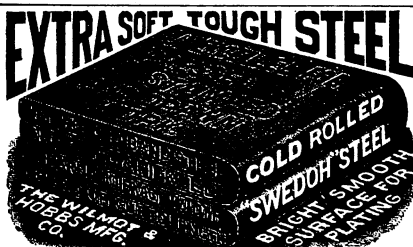
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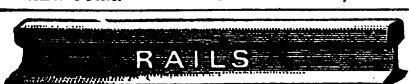


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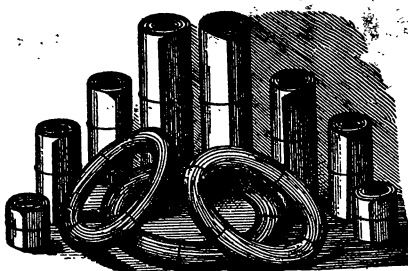
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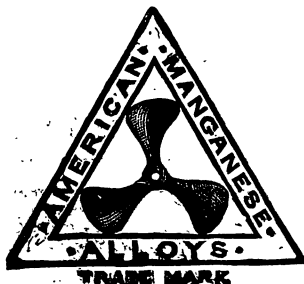
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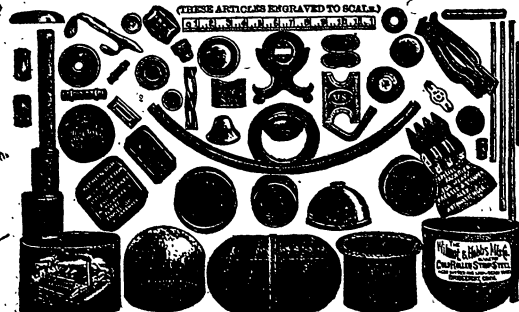
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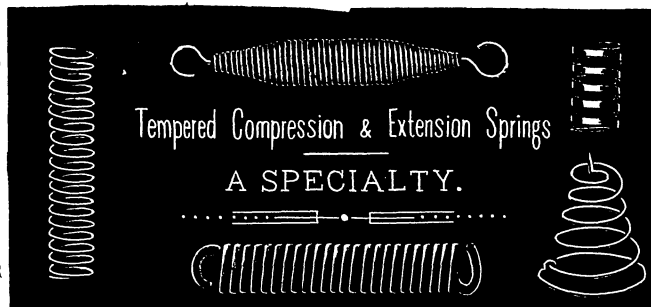


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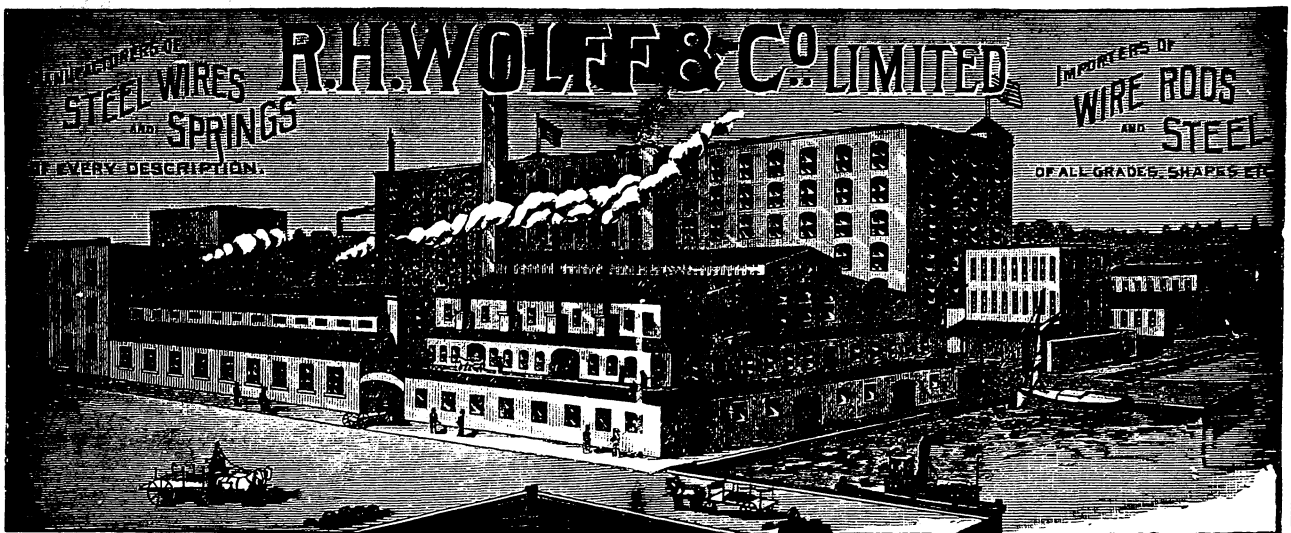
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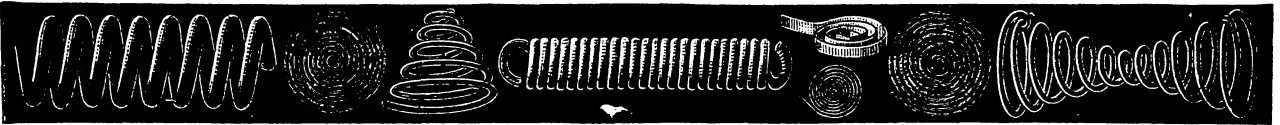
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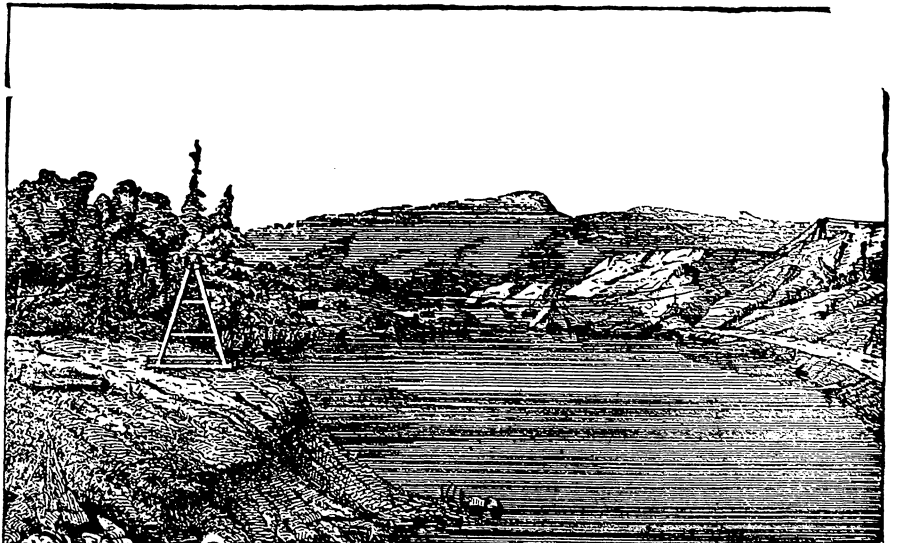
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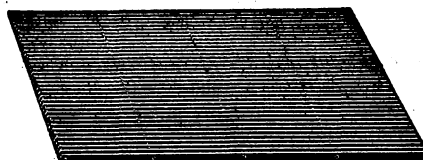


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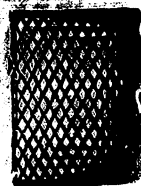


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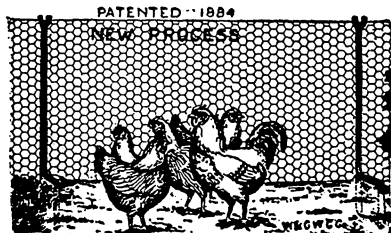
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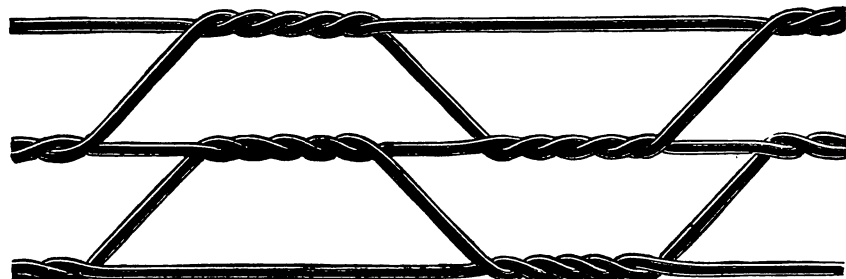
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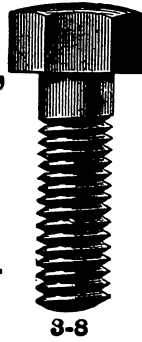
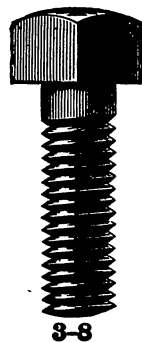
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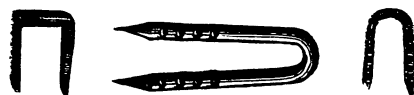
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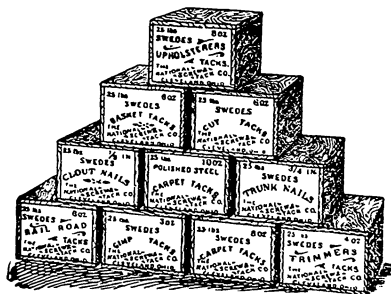
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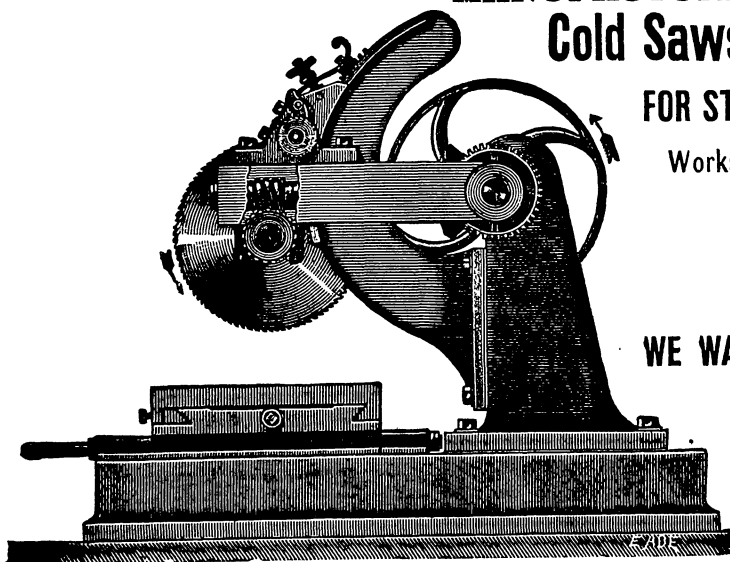
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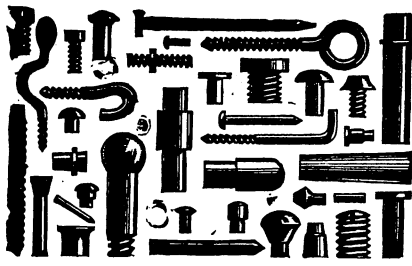
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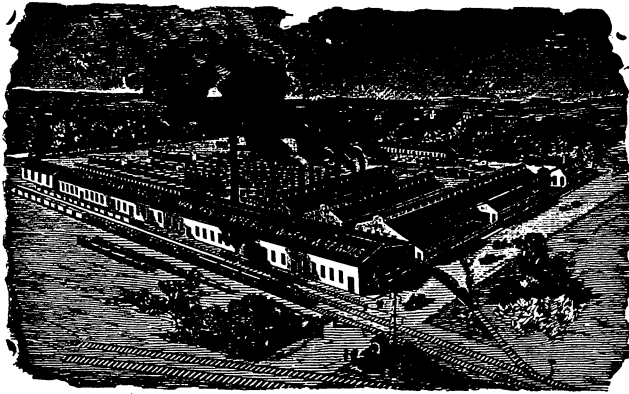
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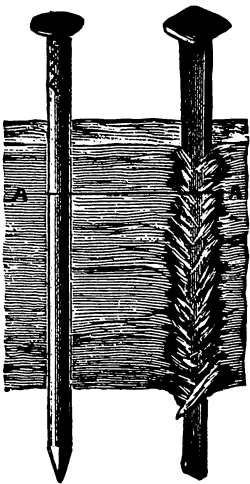
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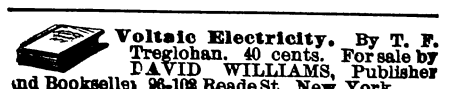
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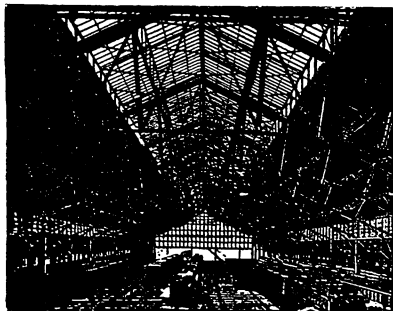
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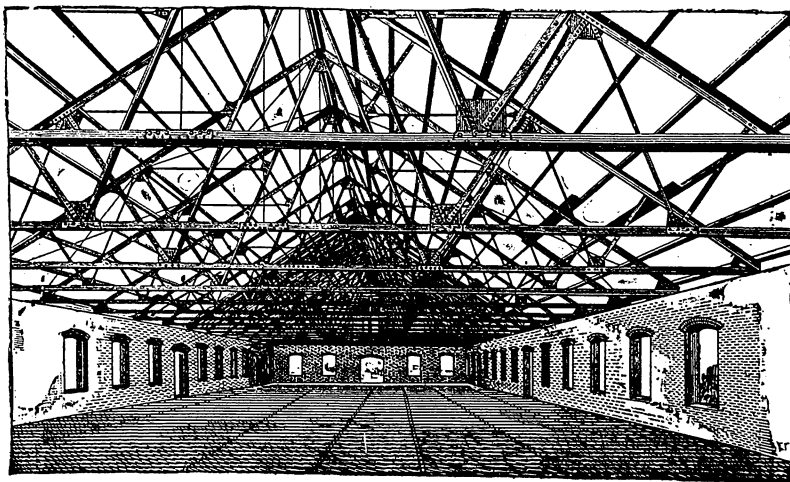
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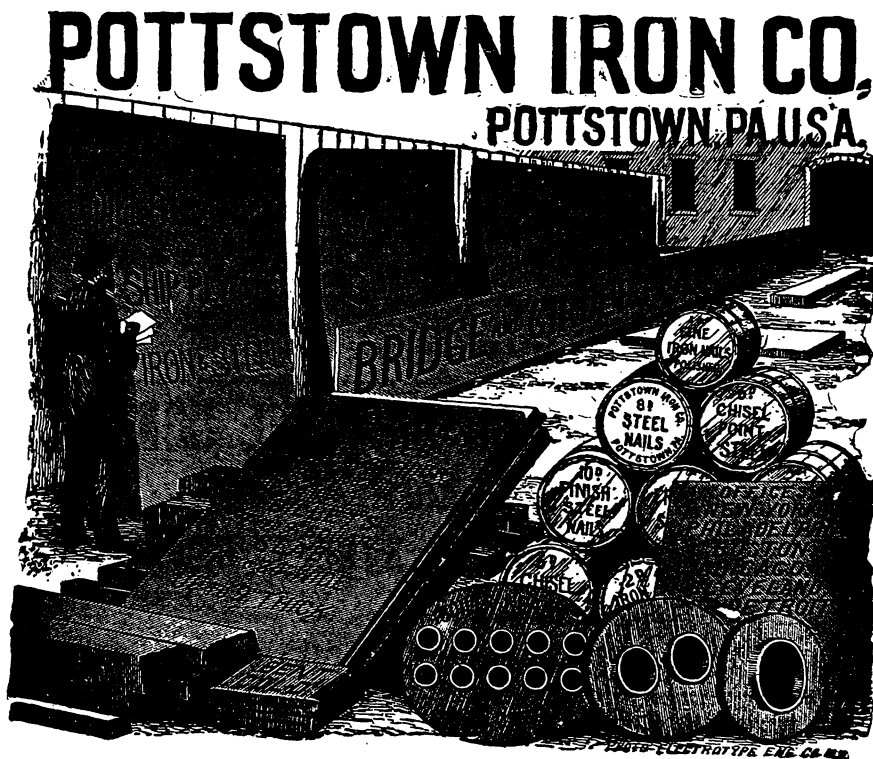
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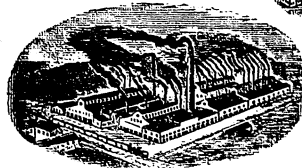
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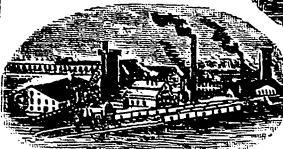
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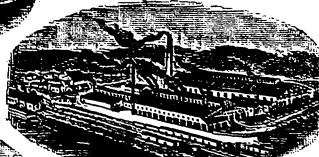
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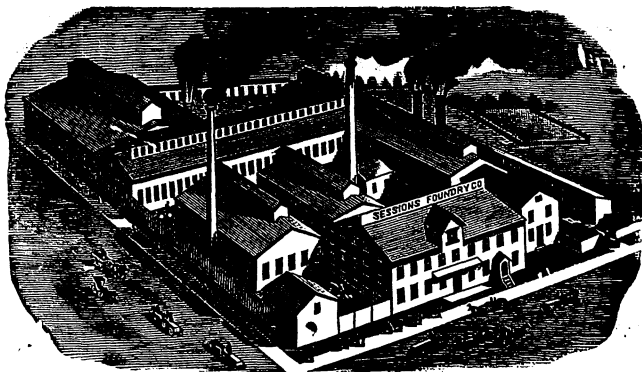
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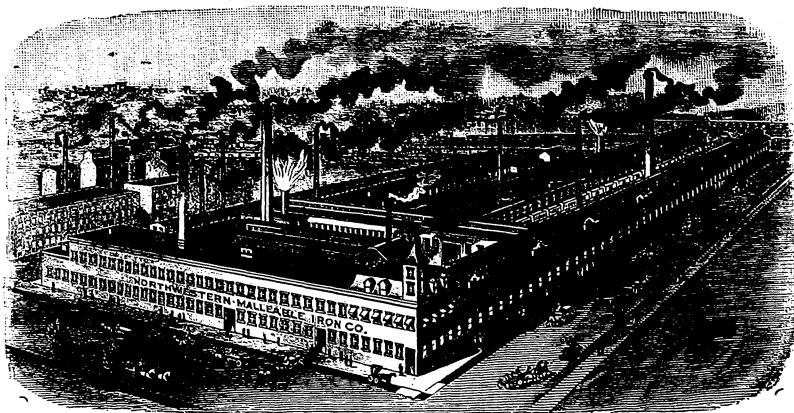
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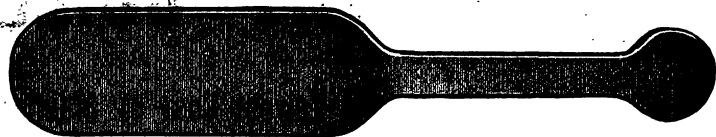
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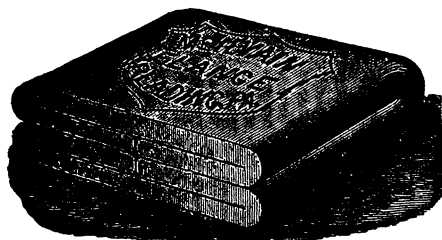
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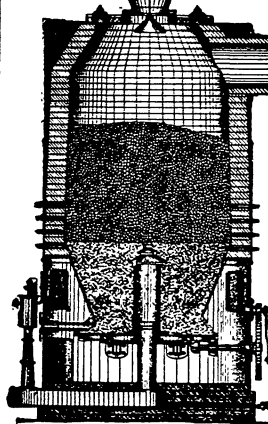
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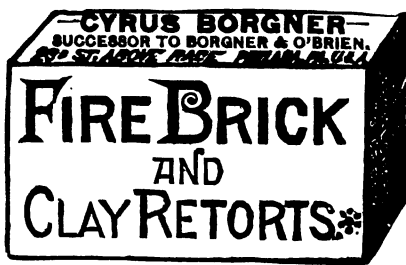
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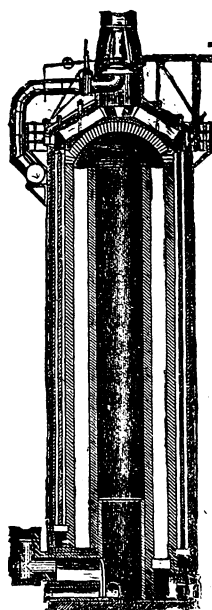
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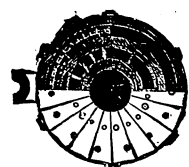
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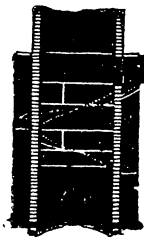
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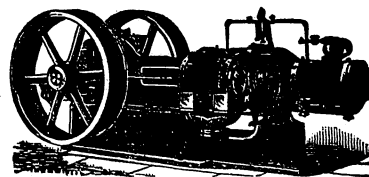
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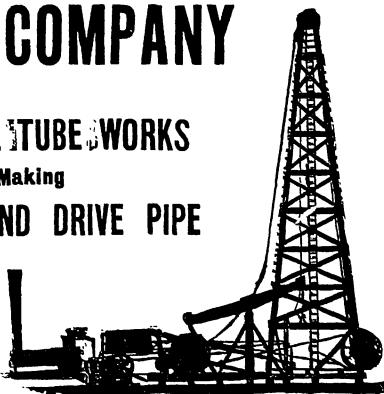
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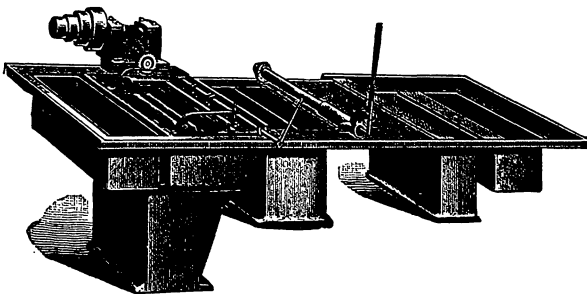
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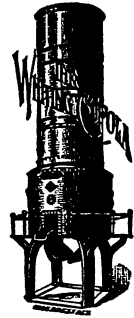
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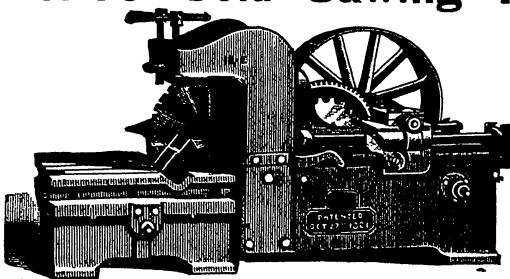
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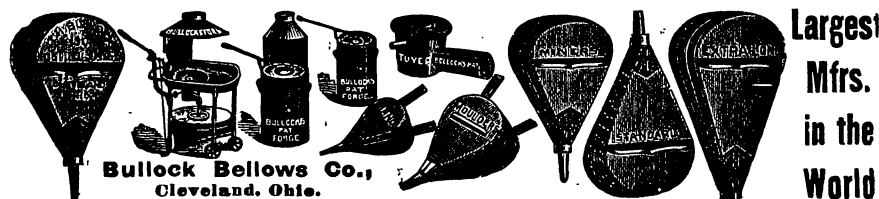
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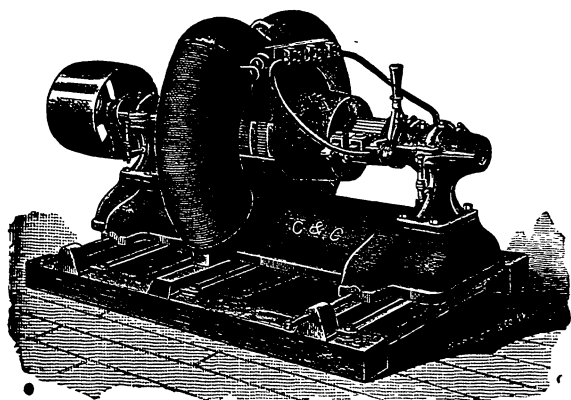
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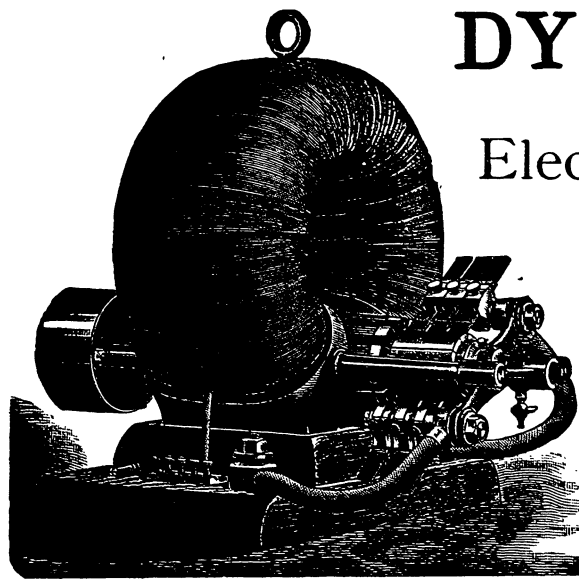
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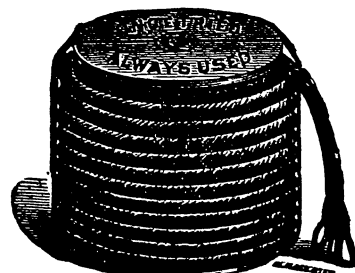


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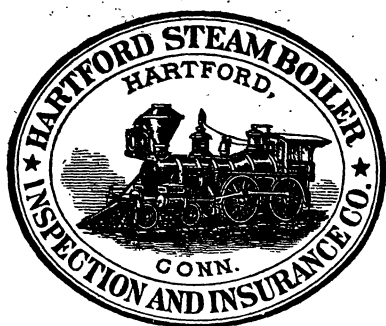
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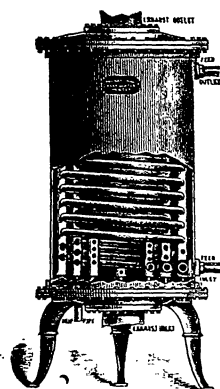


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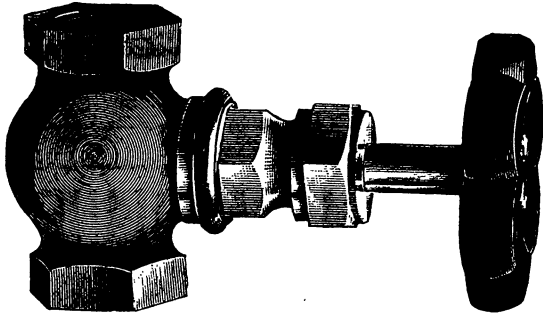
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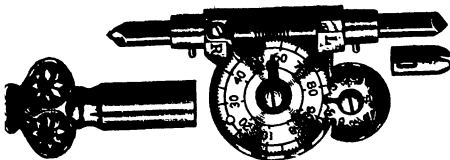
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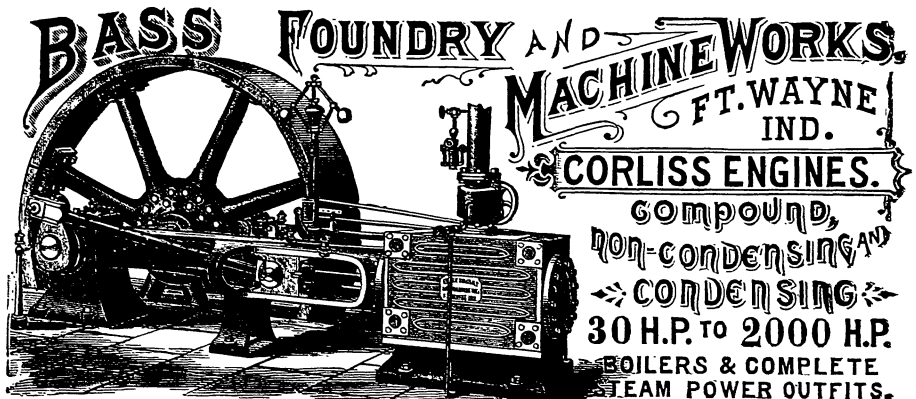
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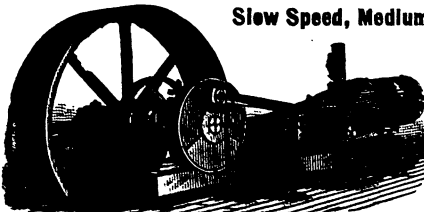
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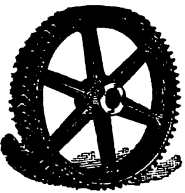
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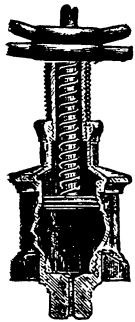
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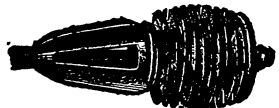
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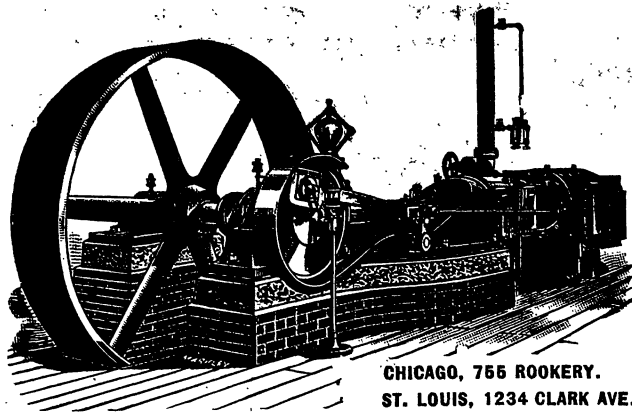
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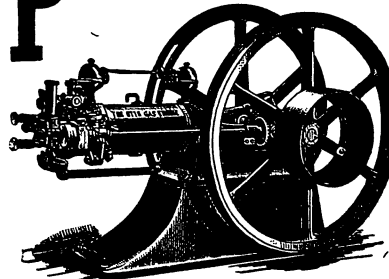
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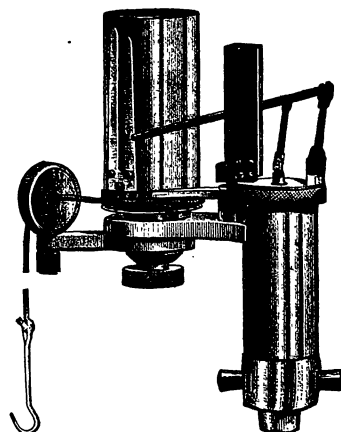
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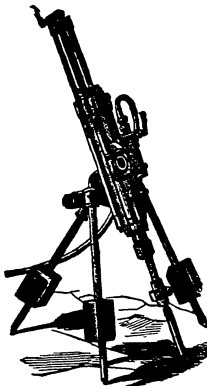
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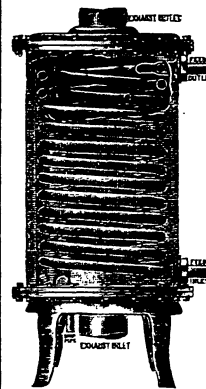


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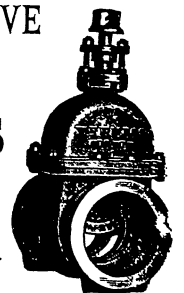
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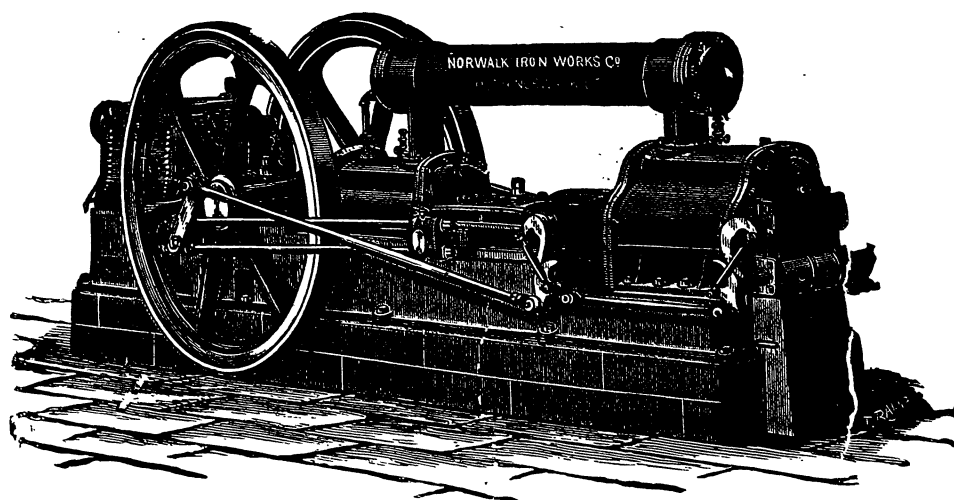
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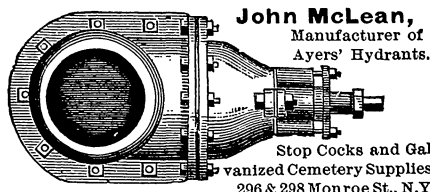
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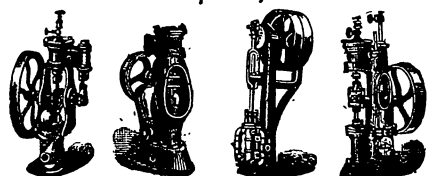
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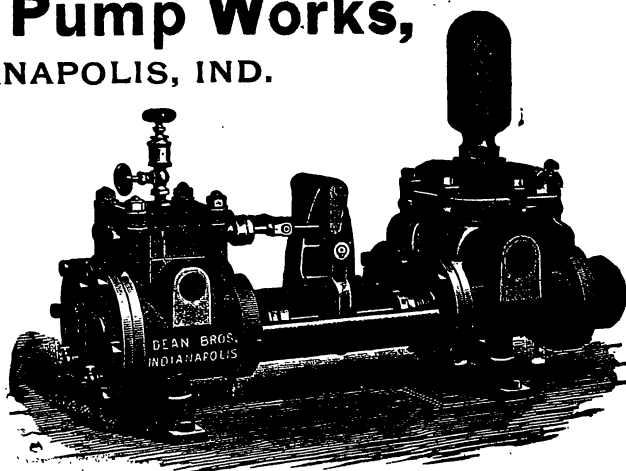
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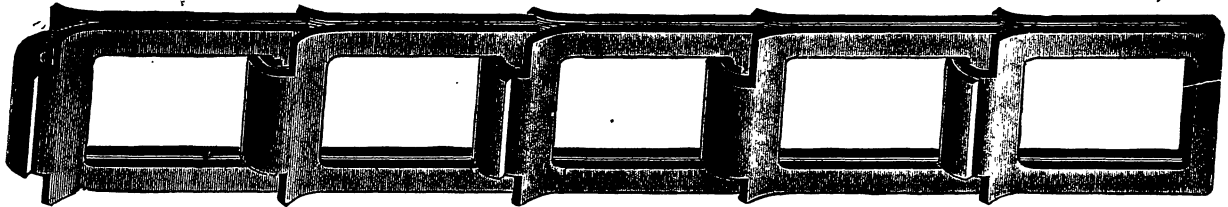
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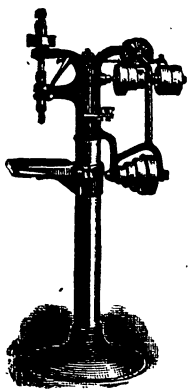
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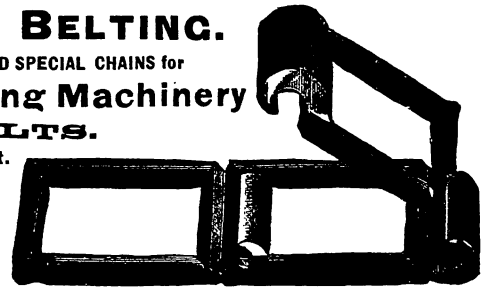
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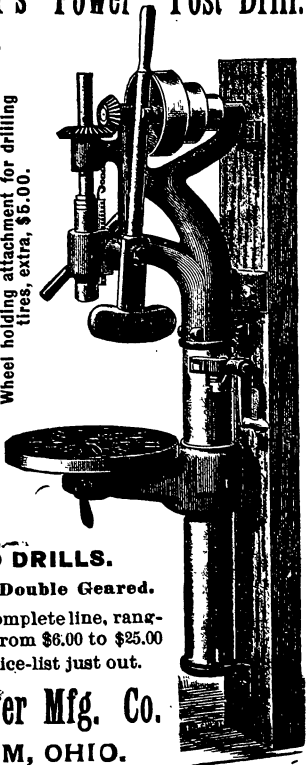
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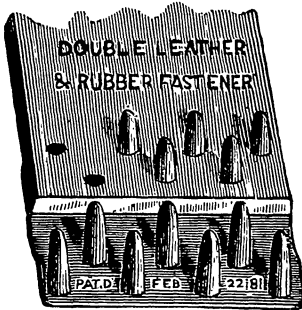
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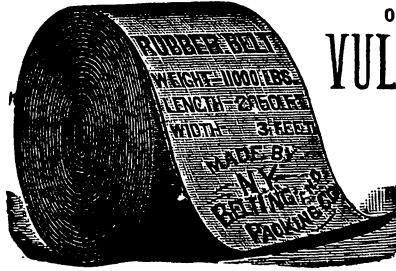
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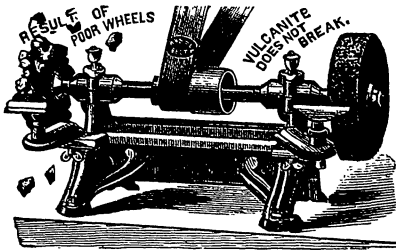
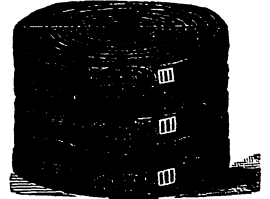
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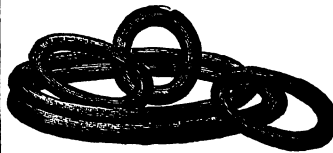
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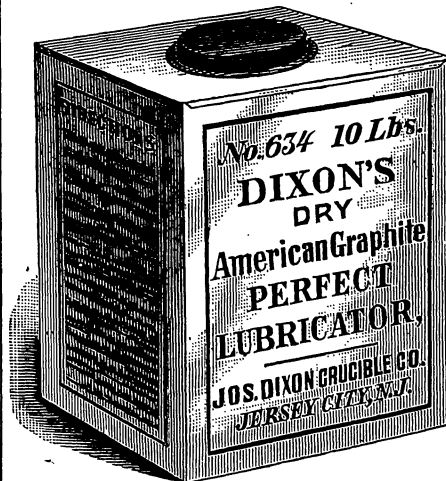
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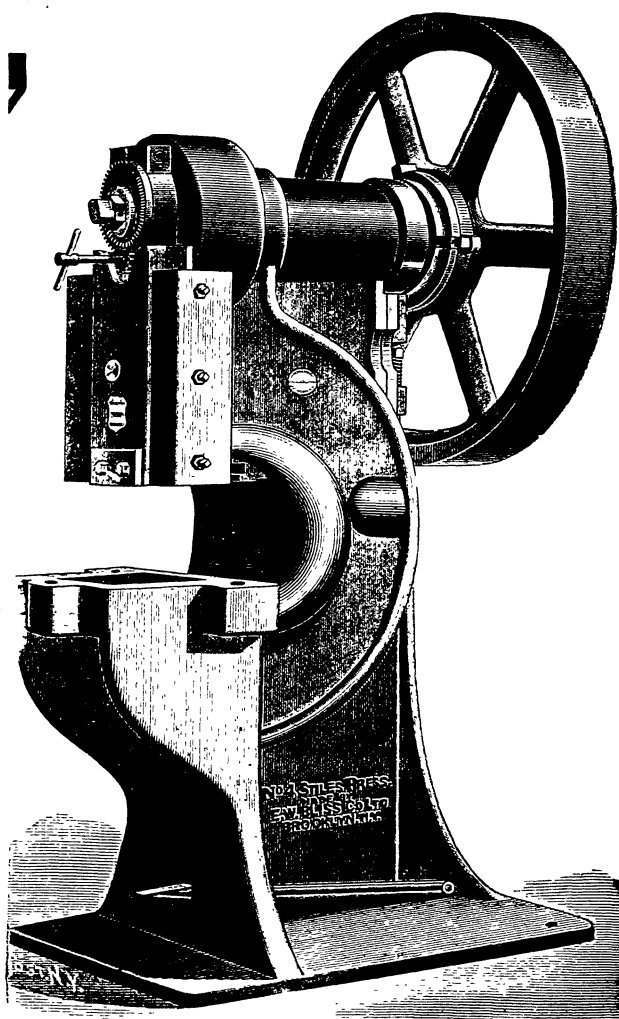
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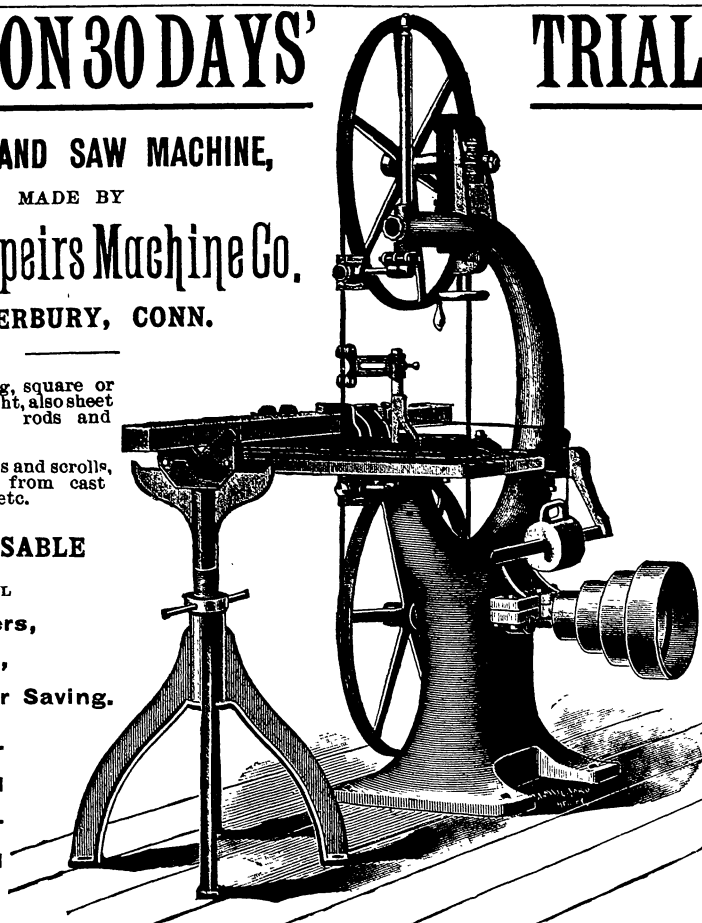
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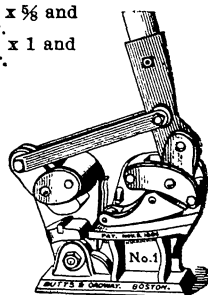
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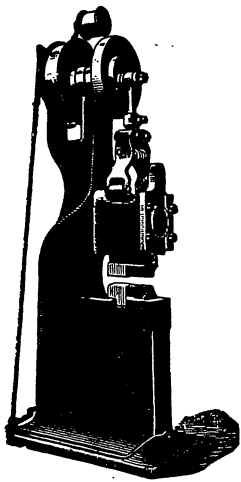
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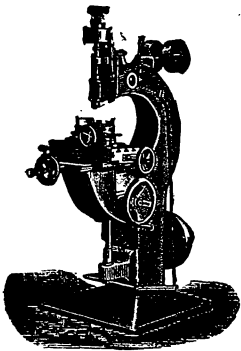
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ITS POINTS OF SUPERIORITY.

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Every effort has been made in constructing this Hammer to make all parts of such proportions as to insure durability. The simplicity of its design leaves few parts to break. The workmanship is the best that can be obtained, and no pains or expense are spared to have the work done in the best possible manner. The material used in the construction of these Hammers is the best that can be obtained. The ram or hammer-head together with the links, side-arms, sleeve and connection, is of wrought iron. The crank and joint-pins are of forged steel, and the castings for other parts the best to be had—every piece used in the construction of the Hammer being iron or steel except the bronze bushing in the crank connection.

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Have a remarkable range of utility and are more indispensable than common horizontal millers.

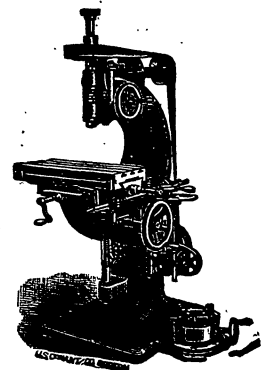
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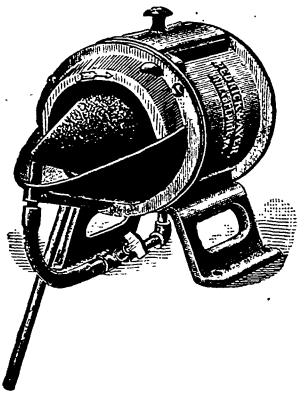
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This cut shows our Gouge and Cutter Grinder. It is designed for grinding inside gouges, cutters and tools having concave cutting edges, and will grind all such tools to a true arc of a circle within its limits. It will be found more serviceable and effective than a whole gang of wheels mounted in the ordinary way. It supplies itself continuously with an abundant amount of water. It is guaranteed to do accurate work without drawing temper. Circulars and prices on application.

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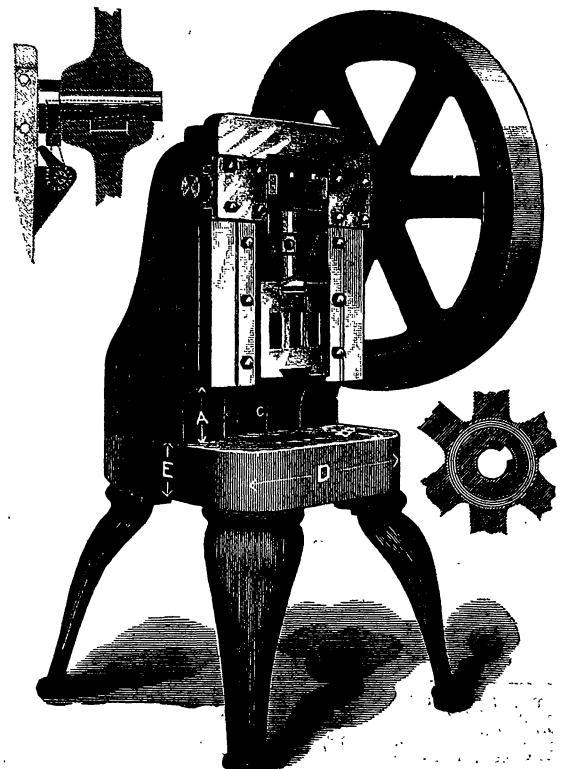
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(Single action open back)

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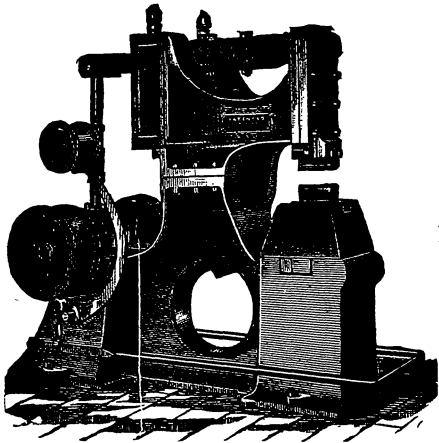
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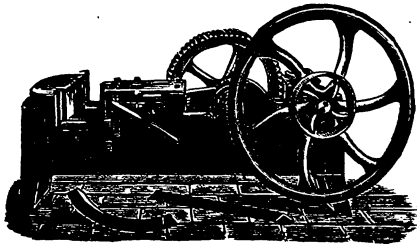
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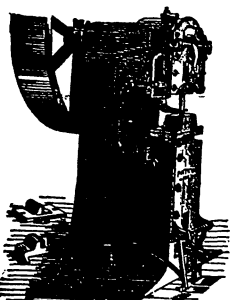
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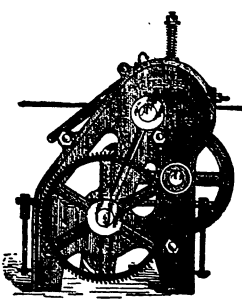
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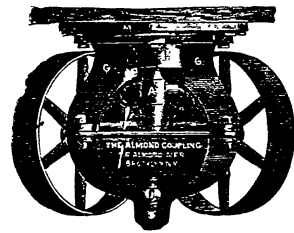
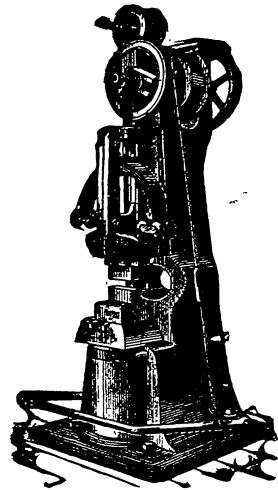
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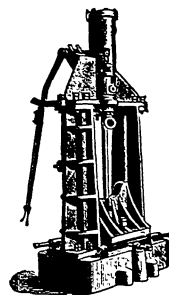
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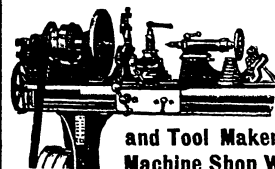
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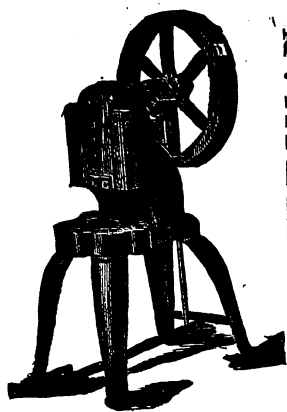
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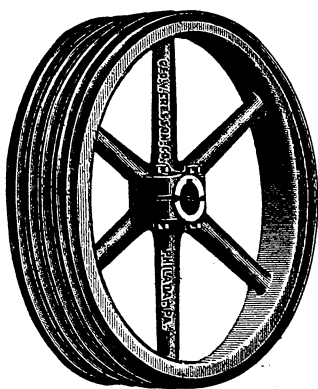
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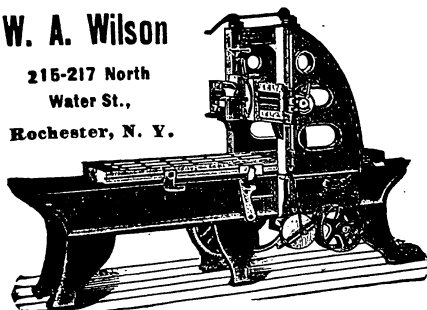


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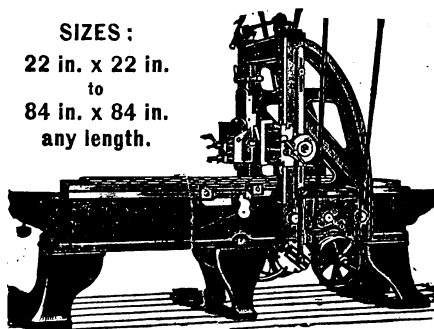
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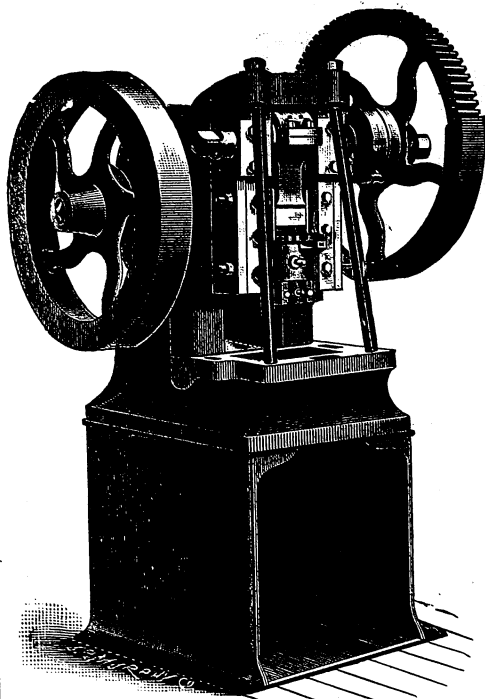
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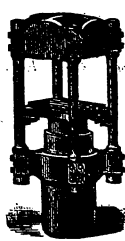


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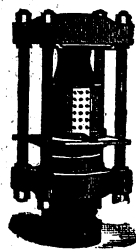
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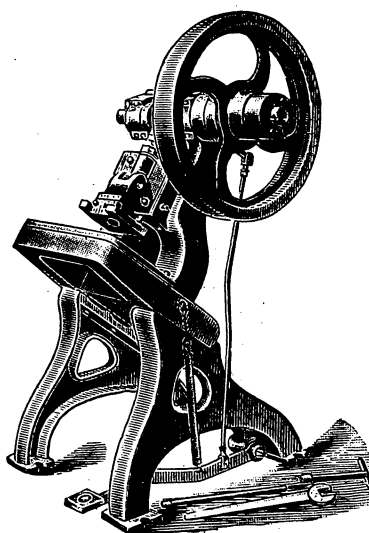


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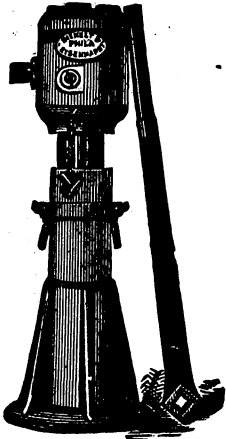
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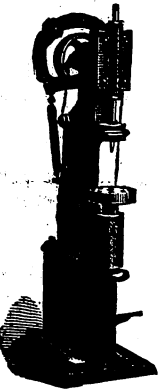
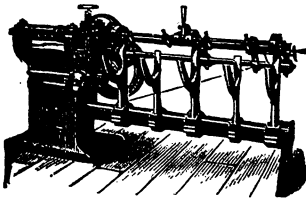
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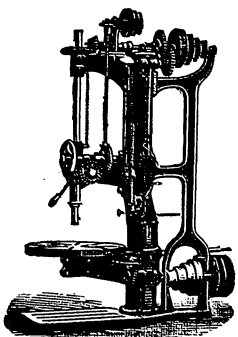
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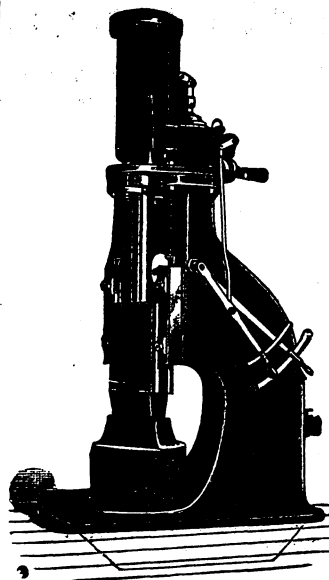
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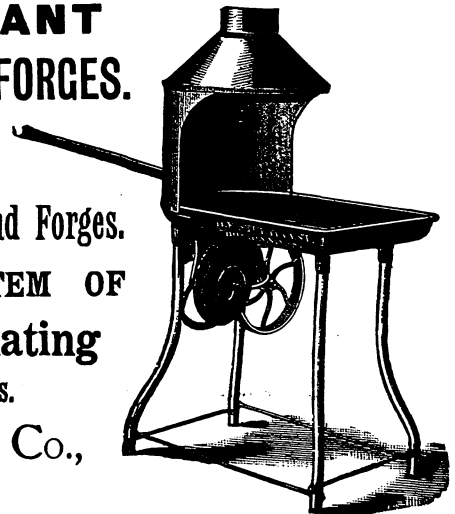
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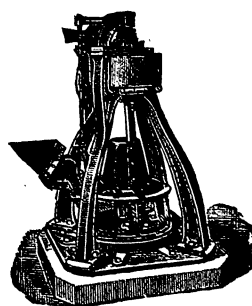
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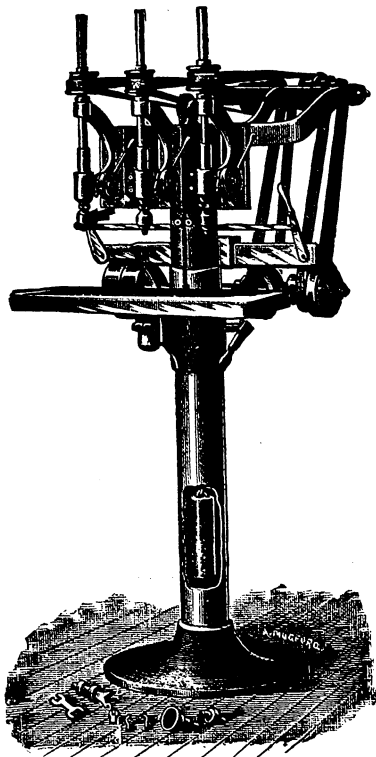
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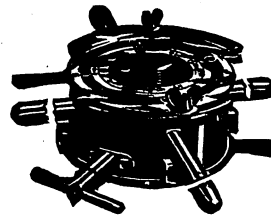
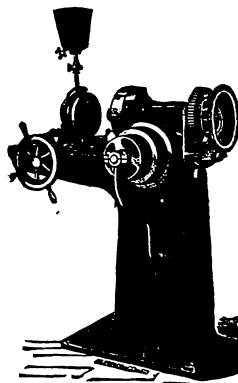
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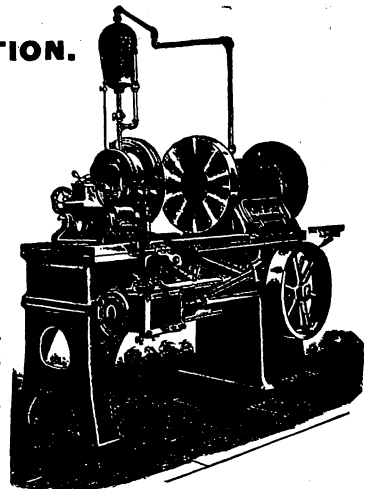
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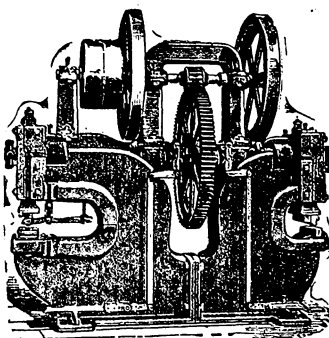
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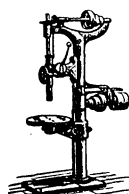
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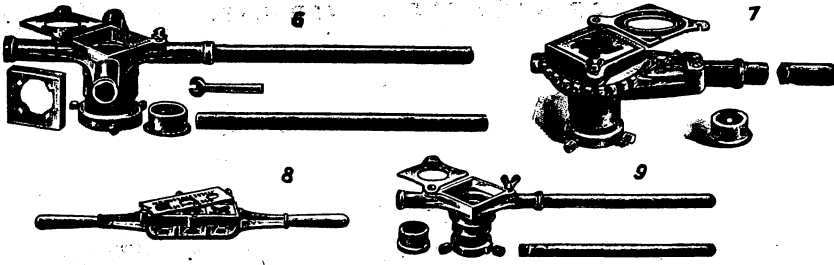
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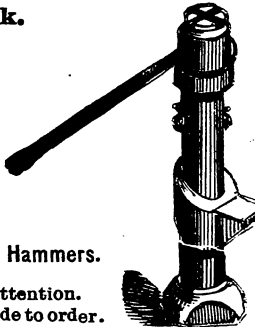
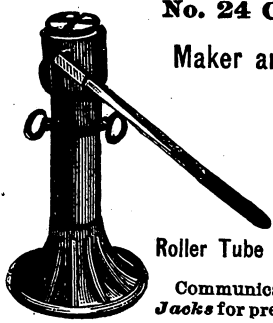
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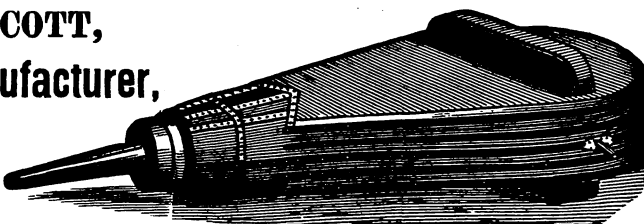
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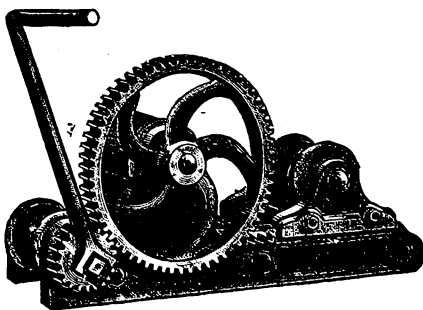
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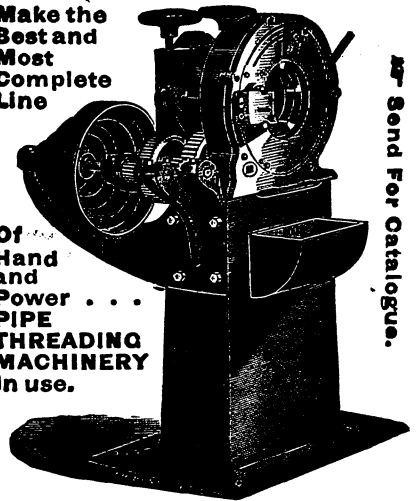
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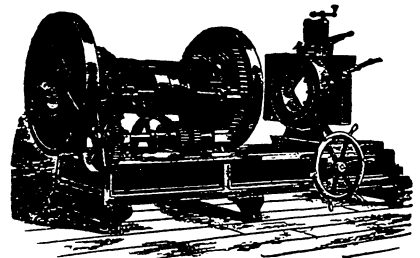
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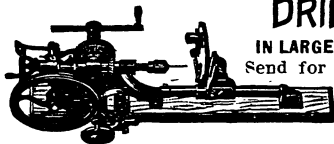
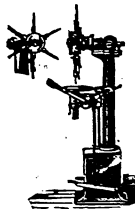
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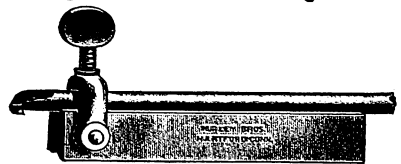
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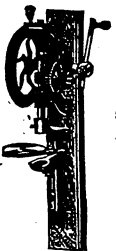
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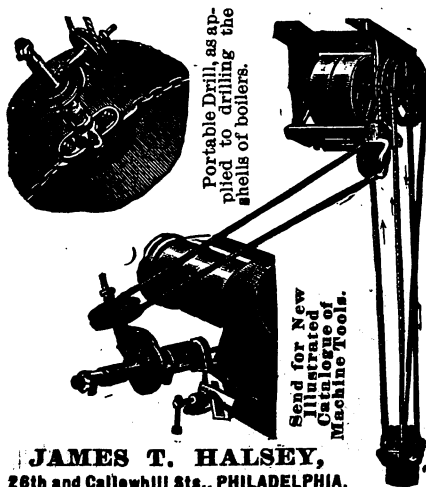
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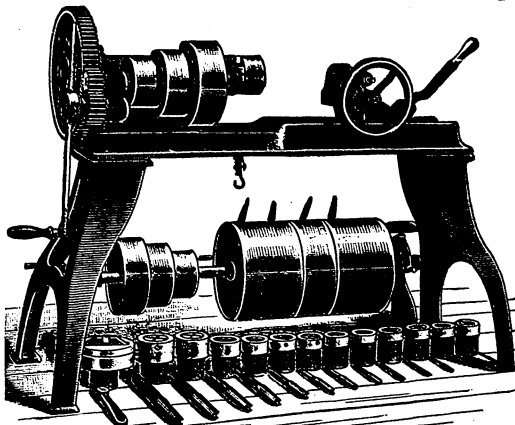
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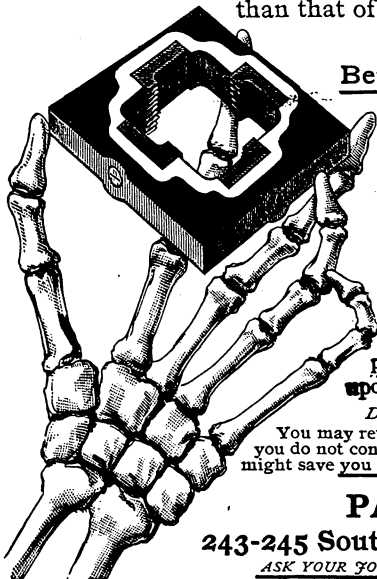
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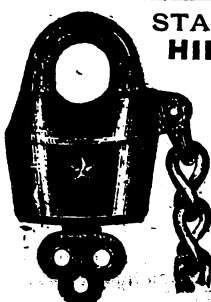
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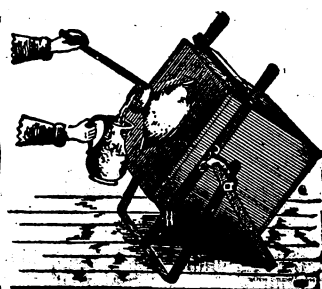
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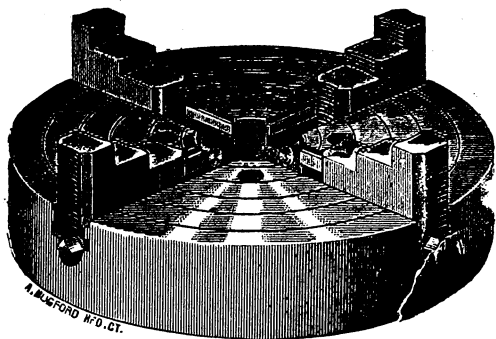
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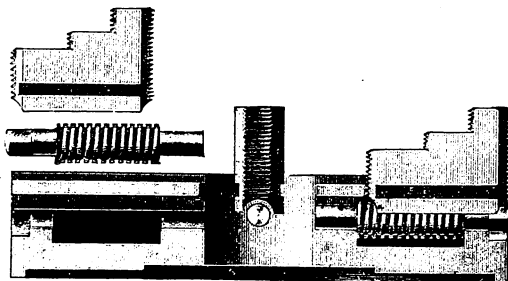
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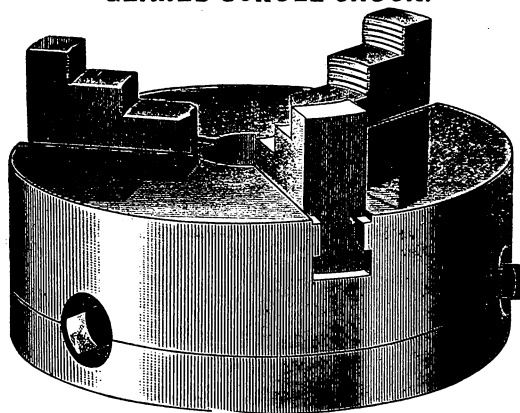
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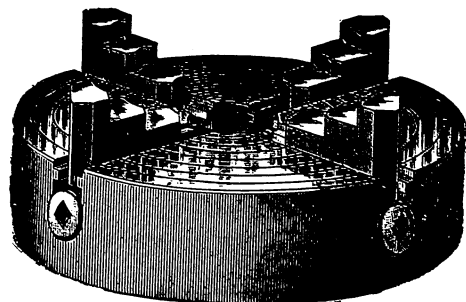
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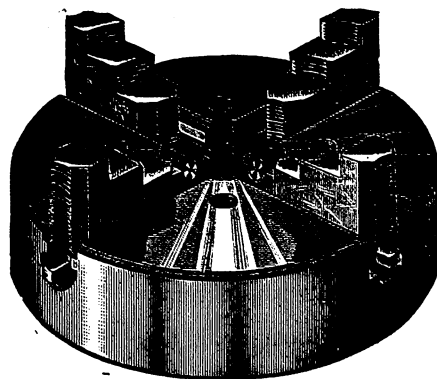


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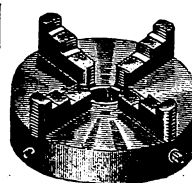
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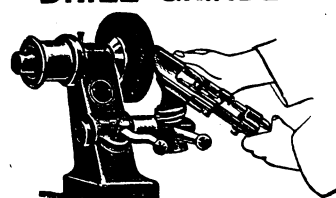
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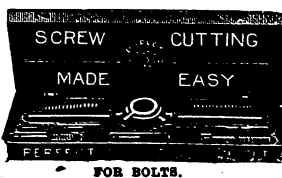


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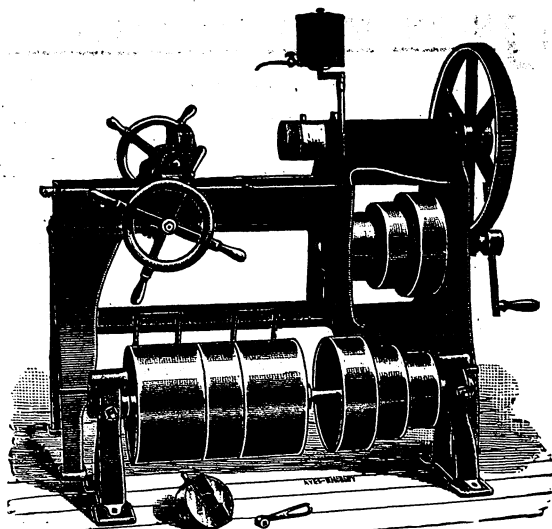
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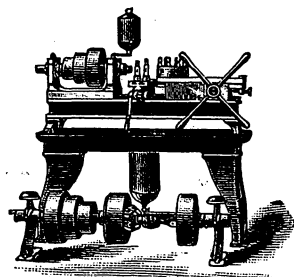
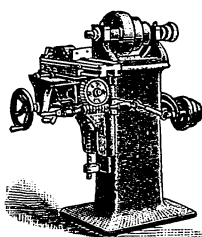
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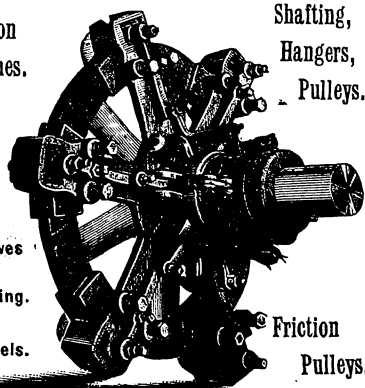
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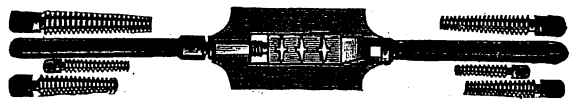
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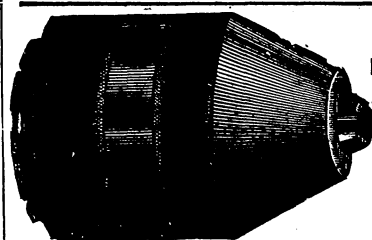


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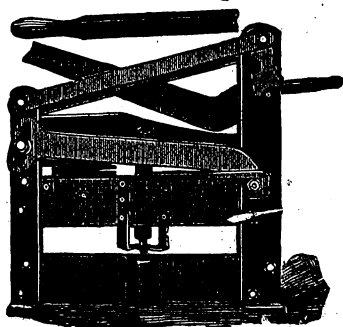
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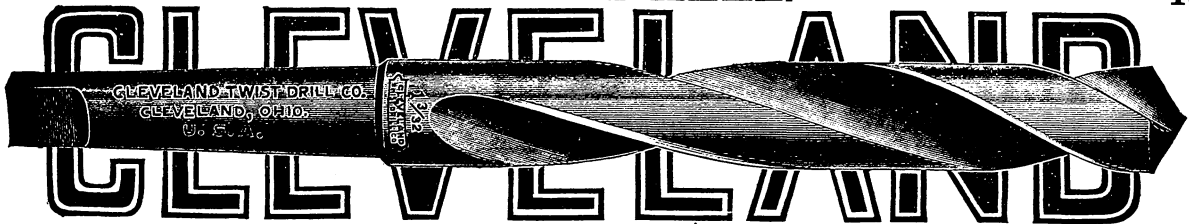
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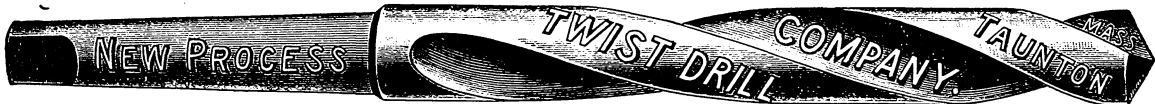
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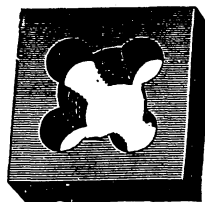
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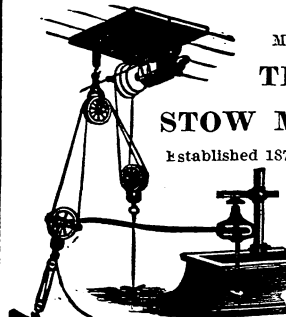
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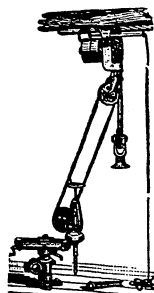


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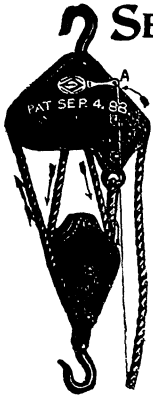
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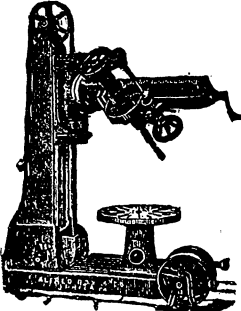
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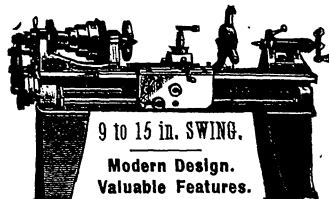
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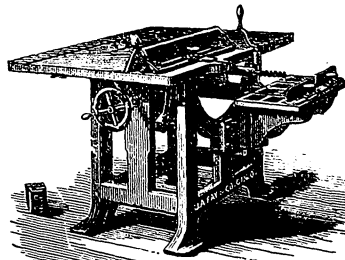
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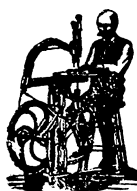
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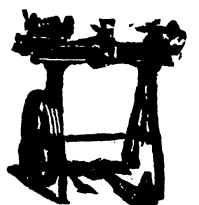

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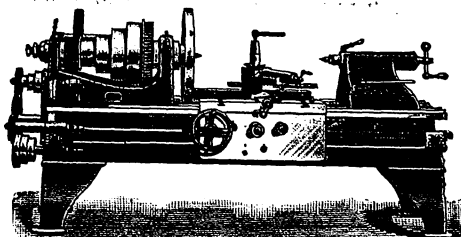
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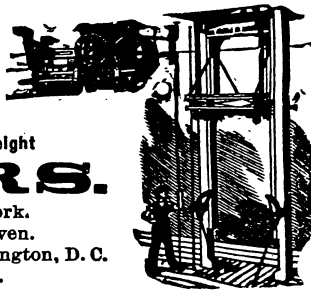
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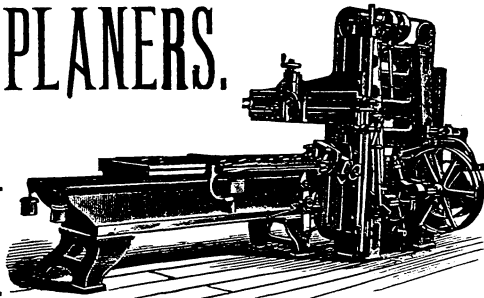
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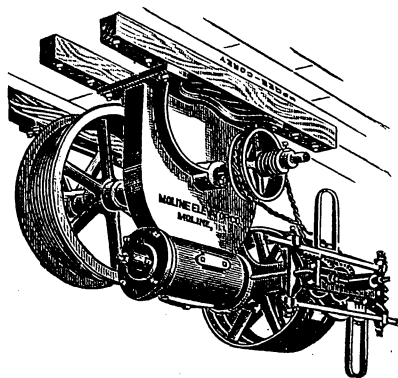
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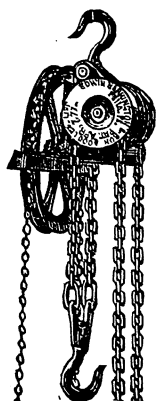
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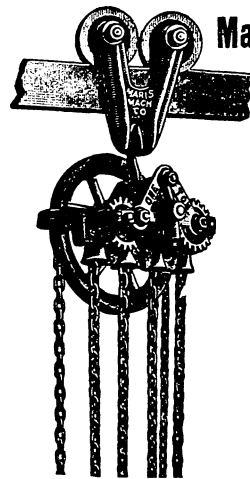
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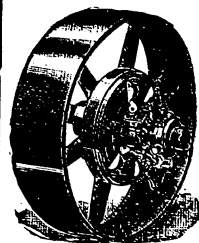
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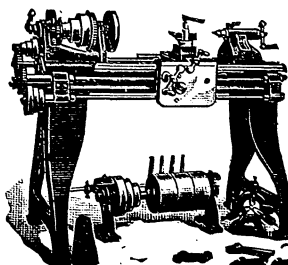
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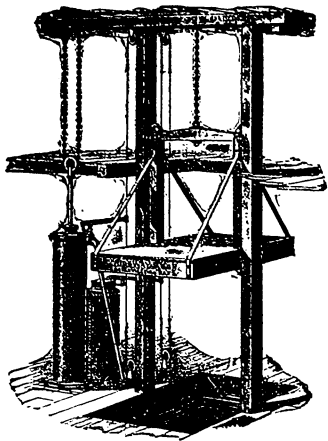
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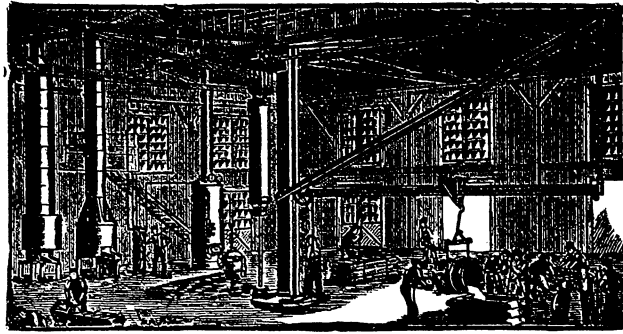


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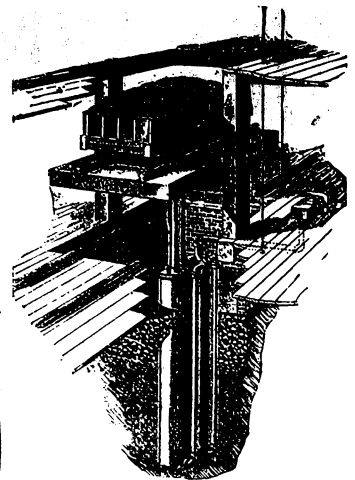
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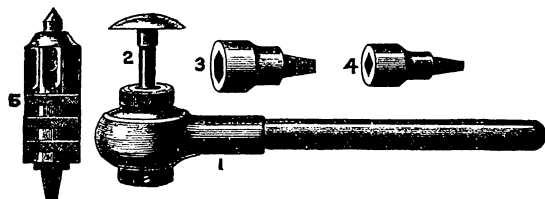
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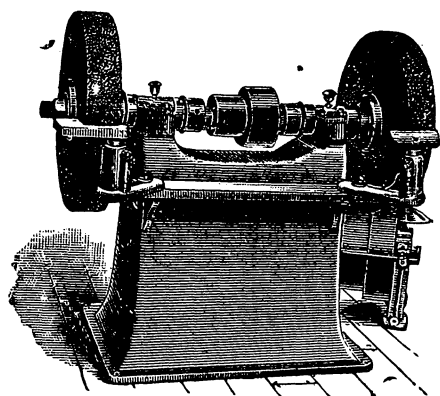
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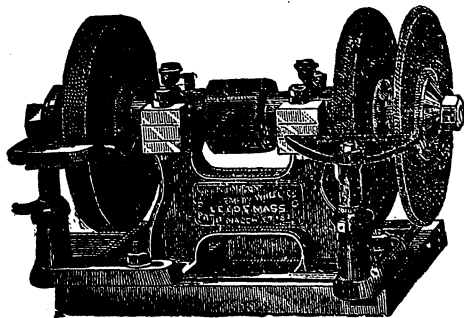
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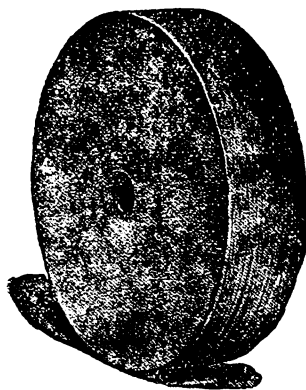
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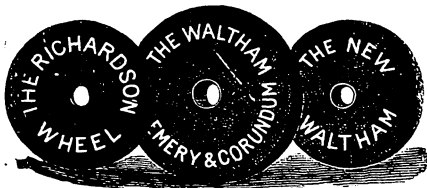
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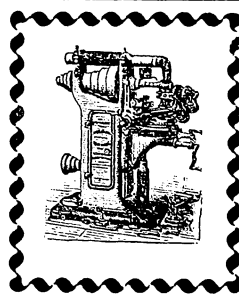
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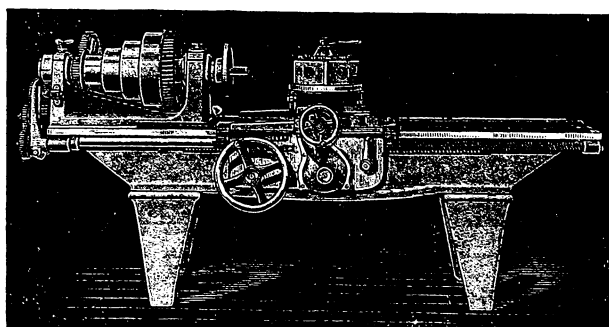
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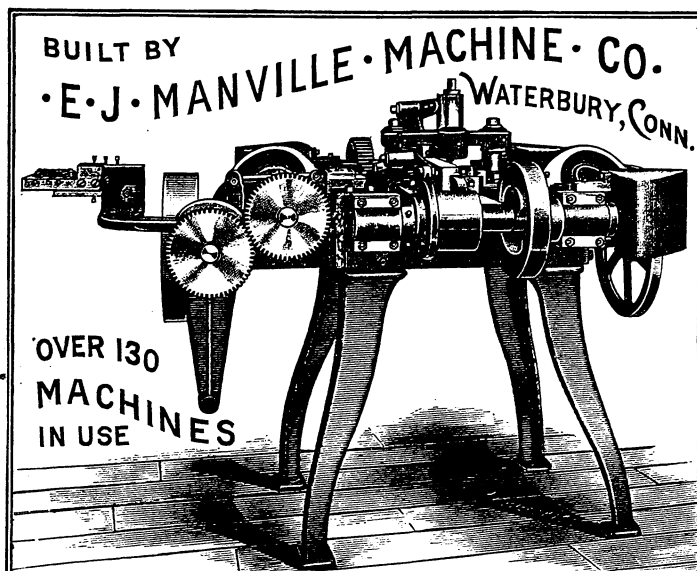
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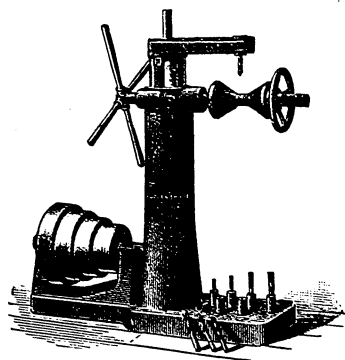
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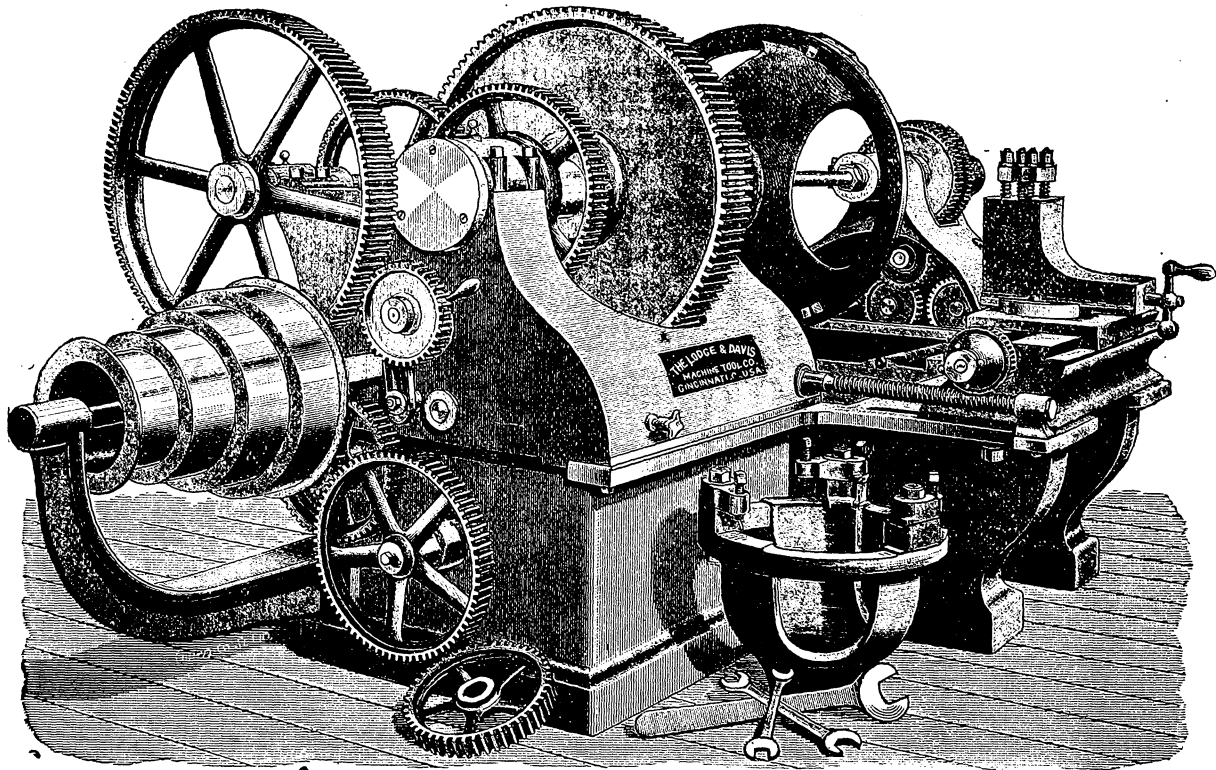
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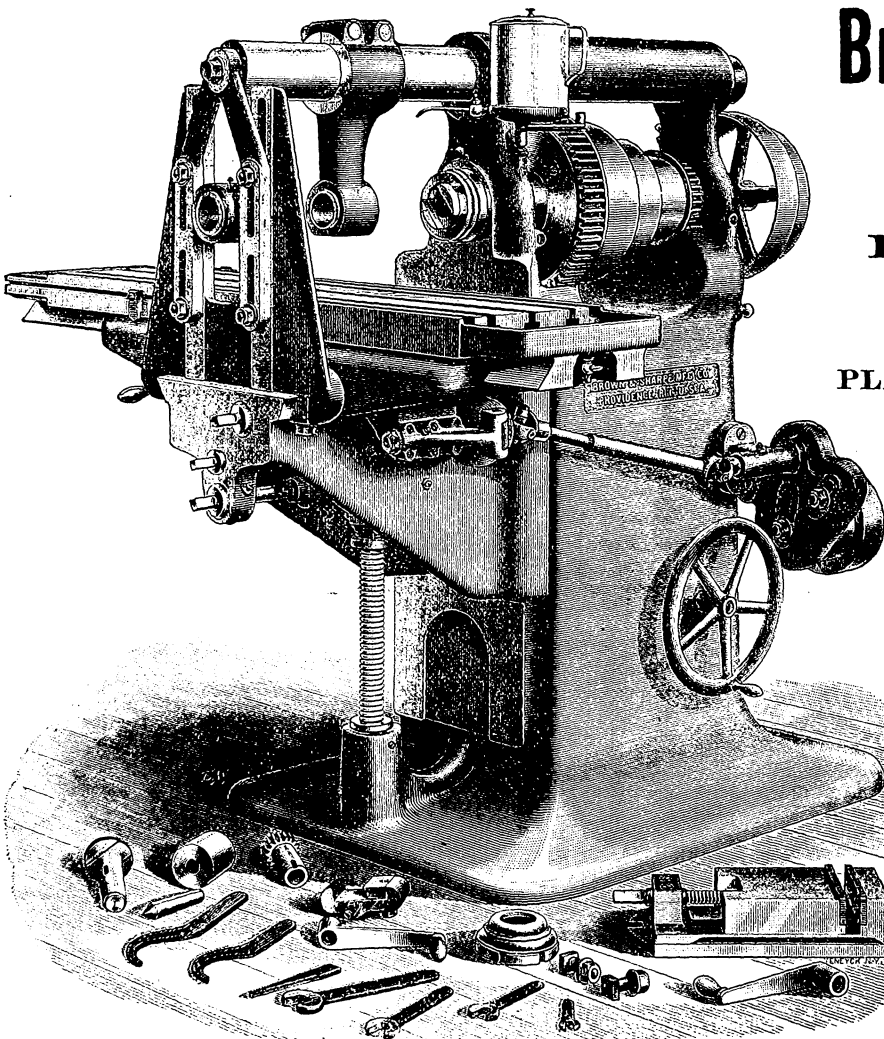
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Four Cylinder Boilers good for Stacks, 15 ft.
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One Stationary Double Cylinder Steam Crane,
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80 in. x 18 1/4 ft., Geared Face Plate.
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 Fire Box Boilers from 15 to 100 horse-power in stock; Engines, Boilers, Shears, Hoisting Engines, Pile Drivers' and Contractors' Supplies.

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40,000 pounds Standard Binding Twine.
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 Will sell cheap.

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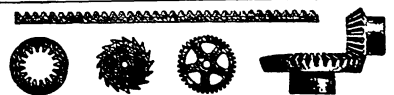
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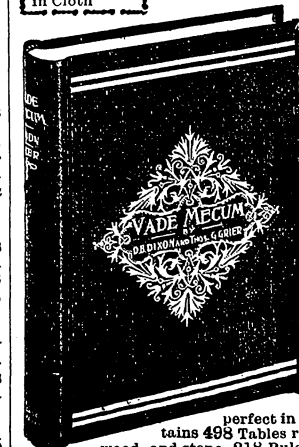
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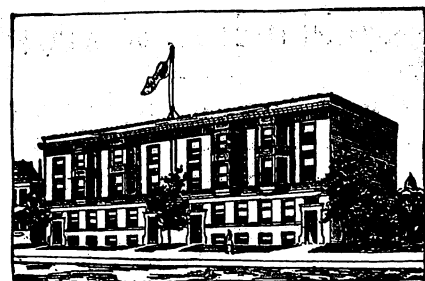
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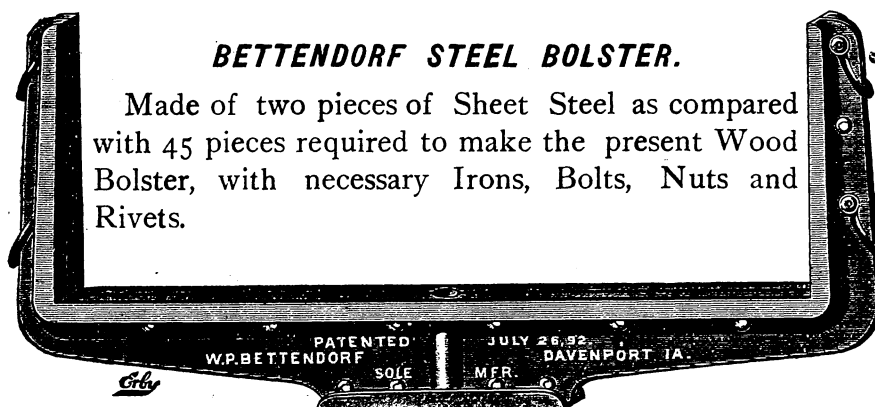
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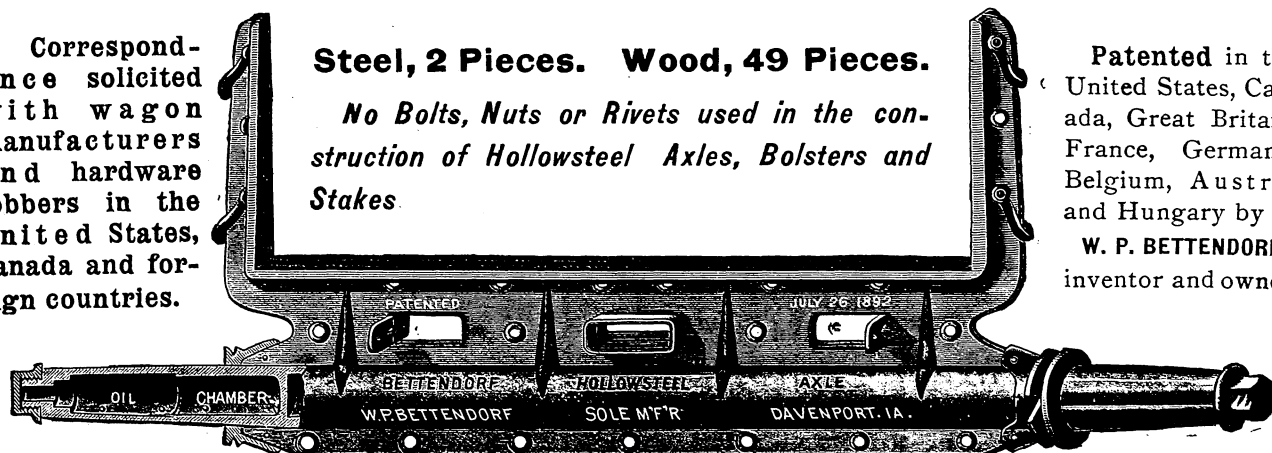
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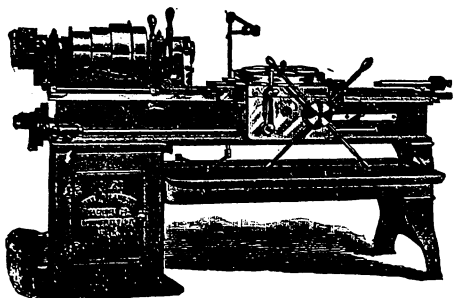
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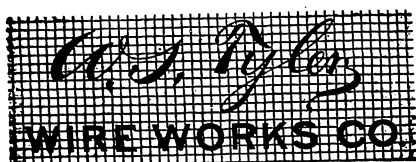
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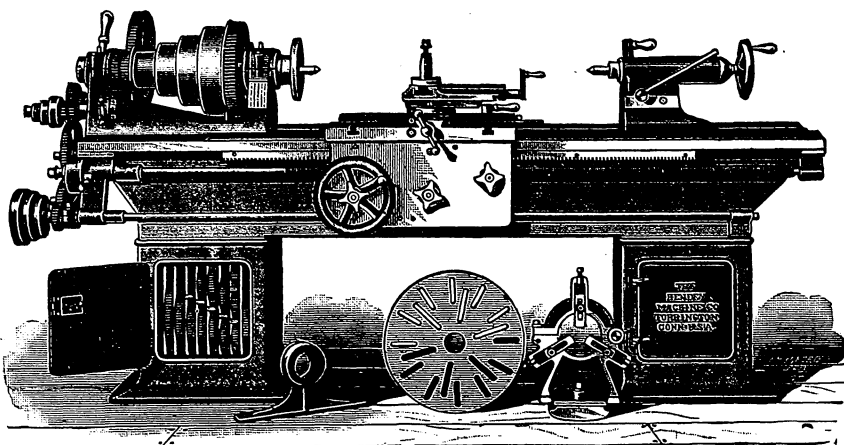
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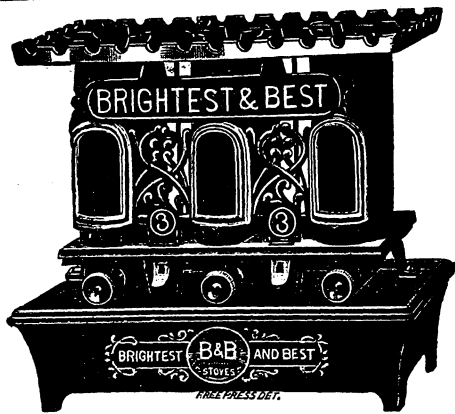
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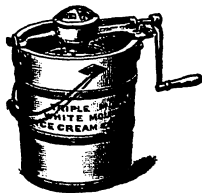
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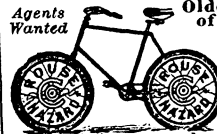
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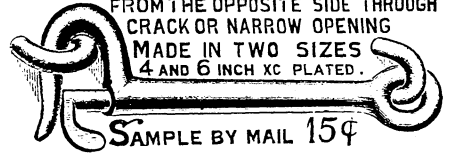


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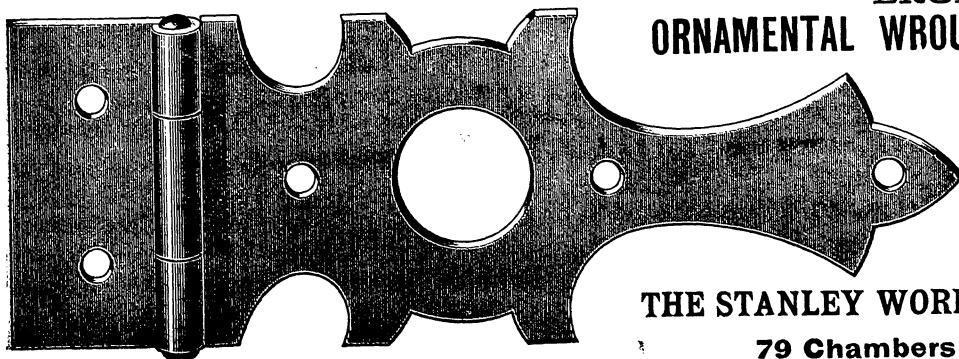
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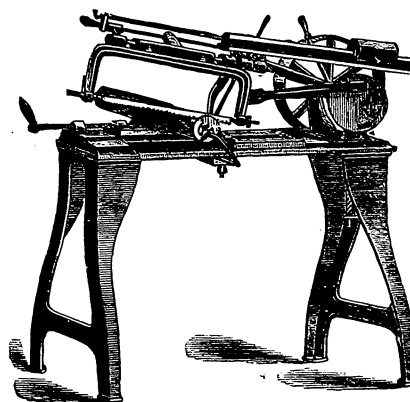
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We are the only Headquarters for Star Hack, Butcher and Bracket Saws. Many Hardware and Supply Dealers are now selling these Power Saws, greatly to their own advantage and that of their customers.

MILLERS FALLS CO., 93 Reade St., New York.

Steam Gauge and Lantern Co.

Syracuse, N. Y.

Western Branch: 26 Lake St., Chicago, Ill.

—MANUFACTURERS OF—

Standard Tubular Lamps and Lanterns.

THE BEST IN THE WORLD.

Tubular Lanterns,

Tubular Street Lamps,

Tubular Hanging Lamps,

Tubular Station Lamps,

Tubular Driving Lamps, etc.



**STANDARD
Spiral Screw Drivers.**

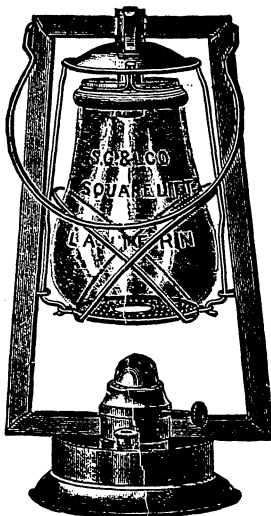
Patented July 3, 1888.

STRONGEST and QUICKEST SCREW DRIVER in the market. One Tempered Steel Bit furnished with each Driver **FINELY POLISHED and HEAVILY NICKEL PLATED.** Lignum Vitæ Head. **LENGTH OVER ALL, 18 inches.** Each one in a separate wooden box with slide cover.

Chantrell Tool Company,
Reading, Pa.

JOHN H. GRAHAM & CO.,
General Agents,

113 Chambers St., New York,



Square Lift Wire Lantern. Open.

THE YALE & TOWNE MFG. COMPANY,

OWNING AND OPERATING

THE YALE LOCK MFG. COMPANY.

THE WESTON CRANE COMPANY.

Lessee, Branford Lock Works.

OFFICE AND WORKS, STAMFORD, CONN.

Ornamental Metal Work, Locks and Builders' Hardware for every purpose.

Catalogues and full information furnished on application at any of our houses.

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1120 Market St.

224 Franklin Street.

THE DEALER who sells what
THE PEOPLE ask for

MAKES FRIENDS and MONEY, and
SAVES TIME and TROUBLE.

The people ask for

**LePage's
Liquid
Glue,** And the people are right.

It is the strongest and best glue made. It has been imitated, but never equalled. Be sure to get what you order and ACCEPT NO SUBSTITUTES.

Our name is on every label

RUSSIA CEMENT CO.,

GLOUCESTER, MASS.

New York Office, 95 Reade and 113 Chambers Streets.

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**STEEL RULES,
HARDENED ENDS.**

Also a full line of

MACHINISTS' FINE TOOLS.

If you haven't our 1893 catalog send us a postal card.

STANDARD TOOL CO.,

ATHOL, MASS., U. S. A.

ATHOL MACHINE CO., Selling Agents.

**JESSE JONES & CO.,
HARDWARE
SHELF BOXES**

Made of Wood.
No screws or
nails used to work
out and cut
your shelving.

615 Commerce St. Phila.

Send for circular and list of references.

**THE GEM
SOLID STEEL MINCER**



Single
and
Double Blades.

Handle and Blade Formed in one piece.
Always Clean. Indestructible.
No Rivets to Wear Loose.
No Wooden Handle to Shrink, Swell, Loosen,
Split, or Fill with Rancid Grease.

MANUFACTURED BY

PALMER HARDWARE MFG. CO.

TROY, N. Y.

ELIZABETHPORT CORDAGE CO.

Manufacturers of

ROPE AND BINDER TWINE

46 South Street, New York.

W. & B. DOUGLAS, MIDDLETOWN, CONN.

Branch Warehouses: 85 and 87 John St., New York; 197 Lake Street, Chicago, Ill.

THE OLDEST AND MOST EXTENSIVE MANUFACTURERS OF

Pumps, Hydraulic Rams, Garden Engines,

Yard Hydrants, Street Washers, Galvanized Pump Chain, Wind Mill Pumps and other Hydraulic Machines In the World.

DOUGLAS' DIAPHRAGM PUMPS, "Loud Patent."

A LARGE CAPACITY, AND EASY WORKING PUMP FOR

Water Works, Sewer Contractors, Foundation Builders, Mines, Quarries,

Fig. 120.

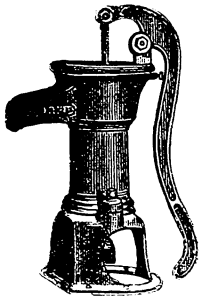
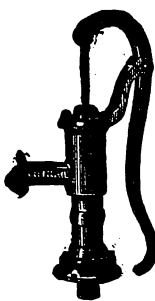


Fig. 76.



or wherever it is desired to raise a large quantity of water by hand power.

The pump has large valves (accessible by hand) and will pump water containing sand, gravel, sewage matter, &c., without choking or any perceptible wear.

Capacity from 3,000 to 4,500 gallons per hour.

These pumps are simple, durable and low priced.

Made either as shown in cut for Hose or for IRON Pipe Suction underneath.

Send for Circular and Price List.

Fig. 809.



Fig. 881



THE DEMING CO.
FACTORY SALEM O.U.S.A.
MANUFACTURERS OF
HAND & POWER PUMPS, WELL SUPPLIES & C. VERTICAL STEAM PUMPING ENGINES.
N.Y. OFFICE: 72 JOHN ST.
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GEN'L. WESTERN AGT.
55 & 57 N. CLINTON ST.
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TRAVERS BROS. CO.,

— MANUFACTURERS OF —

PURE MANILA AND SISAL

ROPE.

MANILA, SISAL AND MIXED

BINDER TWINE.

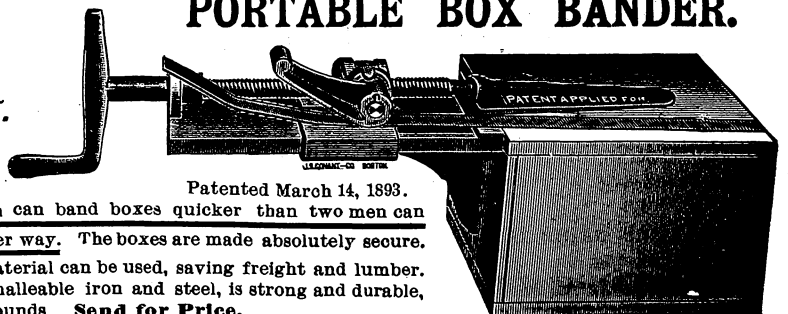
Mexican Hammocks, Hammock Attachments, Peerless Sash Cords, Hardware Twines, Agts. Silver Lake Sash Cords.

Office, 107 Duane St.

16 Thomas St., N. Y.

SOON
PAYS
FOR
ITSELF.

PORTABLE BOX BANDER.



Patented March 14, 1893.

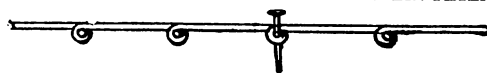
One man can band boxes quicker than two men can in any other way. The boxes are made absolutely secure. Lighter material can be used, saving freight and lumber. Made of malleable iron and steel, is strong and durable, weighs 8 pounds. **Send for Price.**

J. W. GOODELL, Manufacturer,

BURLINGTON, VT.

Lightning Band for Cases and Crates.

(COVERED BY U. S. LETTERS PATENT.)



Mounted on reels and always ready for use and convenient to handle. Easily and quickly binds shipping cases and crates in a neat, strong and substantial manner.

PRICES:

No. 1, per reel of 2000 ft., \$4.50 net.
No. 2, per reel of 2000 ft., \$4.75 net.
Pliers for cutting wire, 50 cents extra.
No. 1 for cases under 800 or 100 pounds, and No. 2 for all heavier cases.

Buffalo Specialty Mfg. Co.
Sole Manufacturers,
Buffalo N. Y. U. S. A

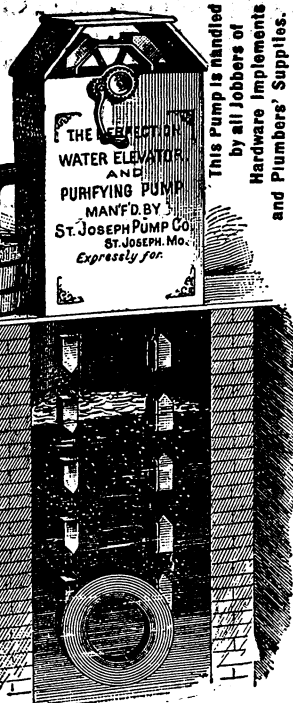
F.E. MYERS & BRO.



Ashland Pump and Hay Tool Works.



OUR NEW DOUBLE
GEARED FIXTURE
FOR 1892.
GUARANTEED.



EVERYBODY

is invited to call on us in Agricultural Hall of the Great World's Columbian Exposition.

Don't call only once, but as often as you can. We will be pleased to see all our friends.

ST. JOSEPH PUMP CO.,

ST. JOSEPH, MO., U. S. A.

E. A. KING, Sec'y and Gen'l Manager.

ESTABLISHED 1840.

A WORD TO THE WISE IS SUFFICIENT

When you purchase a Lantern, Street Lamp or Driving Lamp, remember the

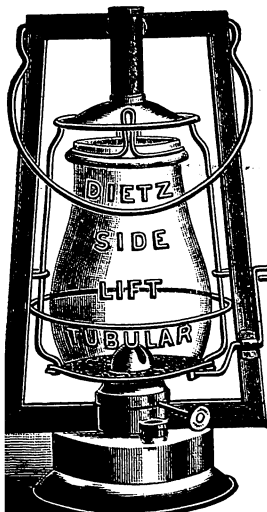
"DIETZ" Make

is the best. Our goods have stood the test of time and are safe and reliable. The name "DIETZ" is plainly stamped on them. Our specialty is Tubular Lanterns, Street Lamps and Driving Lamps. We make a large variety being the oldest and largest house in our line.

ASK FOR THEM!

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New York, 60 Laight St. U. S. A. Chicago, 25 Lake St



BINGHAM PATENT VISE JAW CAP

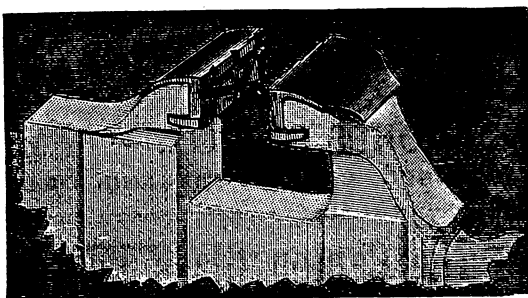
Will Fit any Kind of Vise.

For protecting finished work. Will hold finished rods of any shape without injury.

3 1/4 inch, per pair, 40 cents.
4 1/4 " " 50 "
4 3/4 " " 60 "

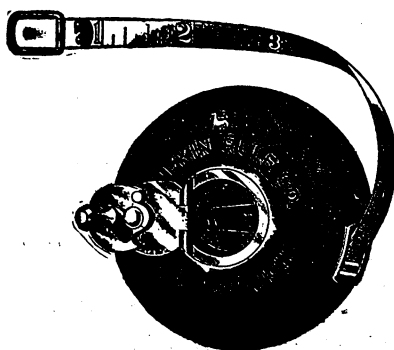
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44 Barclay St., New York.

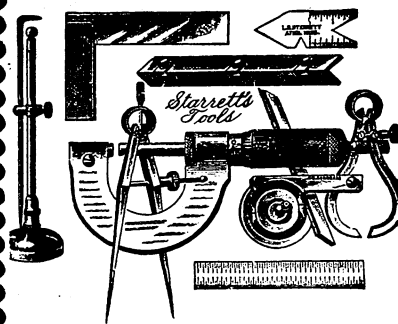


"RELIABLE" Steel Measuring Tapes.

Entirely new. Handle or crank when closed is perfectly flush with leather case. Opens by pressing button on opposite side and folds out double, giving increased leverage. Best and most convenient steel tape on the market. Fully guaranteed. Will send samples on approval.



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Skilled Mechanics

want tools that are warranted accurate, best in workmanship, latest in design, finest in finish.

Live Dealers

want tools they can swear by, not at. That can be relied upon to satisfy intelligent customers. That come nicely put up. That pay a good profit.

Starrett's Tools

meet the requirements of both.

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A NEW CHAIN PUMP

**KERLER'S PATENT -
Galvanized Iron Tubing
FOR CHAIN PUMP.**

Is guaranteed to be
THE BEST.

IT is made of best quality Galvanized Iron, which will not rust nor accumulate filth.

IT only weighs one-half pound to the foot, wet or dry, while wood tubing saturated with water weighs six pounds or more per foot.

IT will last longer than wood tubing.

IT will not freeze in any climate. IT can be attached to any make of pump.

We also manufacture a Galvanized (all) Iron Curb. Address

BELLEVUE PUMP CO.,

Sole Mfrs., BELLEVUE, IOWA.

OR **A. F. SHAPLEIGH HDW. CO., St. Louis.**
Agents for Southern Territory.



BUCKEYE SPRAYING PUMPS,

Also **BUCKEYE** Force
and Lift Pumps,
COLUMBIA Steel & Iron
Turbine Wind Engines,
STEEL DERRICKS, Iron
Fence, **BUCKEYE** Lawn
Mowers, &c. Send for circular



MAST, FOOS & CO., SPRINGFIELD, O.

E. C. ATKINS & CO., Indianapolis, Indiana.

We make a Specialty of Fine High-Grade Saws.

Atkins' Tuttle Tooth One-Man Saw.



BRANCH HOUSES:

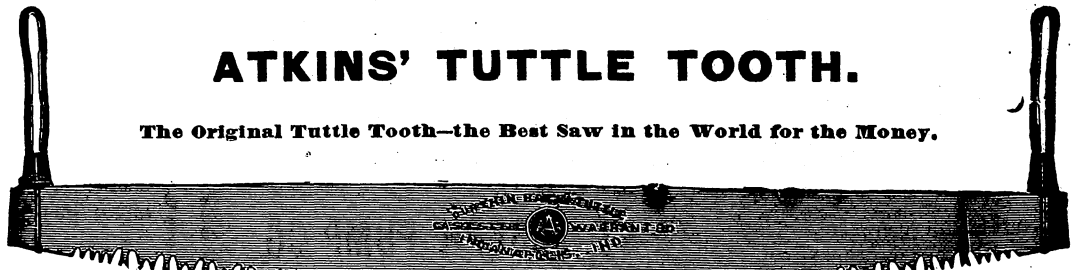
Memphis, Tenn.,

Chattanooga, Tenn.

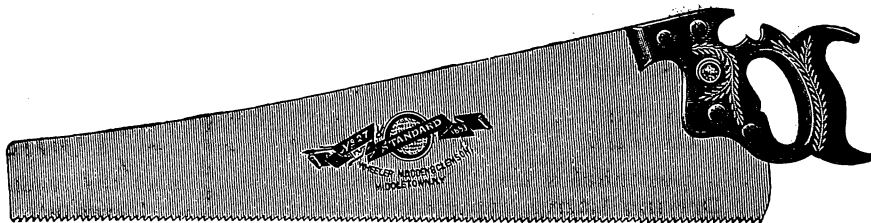
Minneapolis, Minn.

ATKINS' TUTTLE TOOTH.

The Original Tuttle Tooth—the Best Saw in the World for the Money.



THE NATIONAL SAW CO., 96 & 98 Reade St., New York.



The latest improved high class Hand Saw. It has hollow back blade, close up apple handle carved, ground thin back, patent temper and high finish, without a question the leader among first quality mechanics' saws. We warrant it fully. Packed 1-3 doz. assorted points in pasteboard boxes with telescope cover. We manufacture all styles, kinds and variety of Hand Saws, and solicit inquiries.

Three Essentials

IN THE MODERN
CROSS-CUT SAW.

- 1.—Teeth of uniform thickness.
- 2.—Five Gauges taper in middle of blade.
- 3.—Three Gauges heavier on ends than in center of back.

For 10 YEARS the Simonds Crescent-ground Cross-cut Saw (the only Saw on the market possessing these **ESSENTIALS**) has stood out prominently in contrast with all other makes of cross-cut saws. It has been the **CRESCENT-GROUND** against the **FIELD--MODERN IDEAS** against **ANCIENT METHODS**.

TO-DAY the Crescent-ground Saw is in use in every important lumber camp in the United States. Manufacturers have endeavored to imitate it, but the Machinery producing the Saw, the Process by which it is produced, and **THE SAW**, are patented. All imitations are but involuntary acknowledgments of the **SUPERIORITY** of

THE CRESCENT-GROUND CROSS-CUT SAW.

(PATENTED DEC. 26, 1882.)

SIMONDS MFG. CO.,

FITCHBURG, MASS.

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SIMONDS SAW CO.,

SAN FRANCISCO, CAL.

PORTLAND, ORE.

CARPENTERS' & MACHINISTS'

IRON BENCH LEVEL

WITH DOUBLE PLUMB.

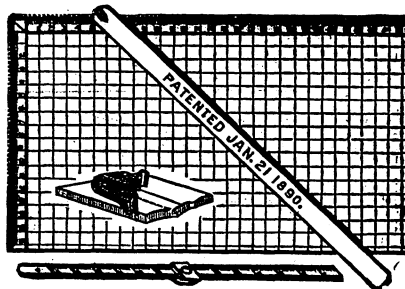
No. 5. 6 in.



MANUFACTURED BY

C. F. RICHARDSON & SON,

ATHOL, MASS.



The Canton Glass Board.

Cuts any Fraction of an Inch by Eighths.

Unequaled for accuracy and quick work in cutting square or at any angle. Saves breakages, &c.

—ALSO—

IMPROVED TRAMMEL RULE for Cutting Circles

From 3 inches up to 48 inches, Segments, Gothic Shapes, &c.

Send for Circular.

The Canton Saw Co., Canton, Ohio.

HORACE E. BRITTON, Stoughton, Mass.,

Manufacturer of the

HENRY'S PATENT COMBINATION
HAFT,



AND OTHER TOOL SPECIALTIES.

The Combination Haft contains six Brad-Awls, one Chisel, Screw Driver, Diamond Point Awl, Marking Awl, Tack Puller and Reamer. Send for Circular and Prices.

Full Set Sent Post-paid on receipt of \$1.00. (No stamps.)

"If you want a Saw it is best to get one with a name on it which has a reputation.

A man who has made a reputation for his goods knows its value as well as its cost and will maintain it."—HENRY DISSTON.

THE SAWS THAT LEAD THEM ALL

DISSTON & SONS' PATENT D-8 HAND SAW.

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TO
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AND

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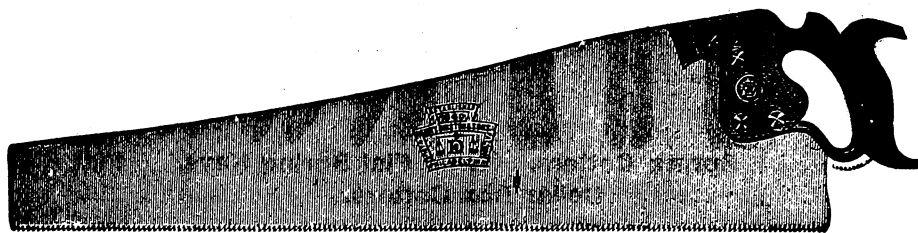
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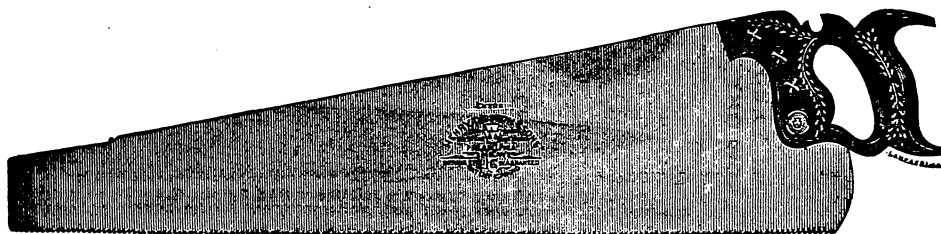
Address.



This Saw combines all the valuable improvements in Hand Saws that have been made by us of late. The first and most important is the hollow or skew back, the success of which can best be attested by the number sold. The peculiar shape of the butt or heel, coupled with the new method of fastening to the handle, give a full stroke of the blade without fear of catching or hooking in the work; and as the handle is put further on the blade you have a full stop on the proper point and a greater command over your Saw, by reason of being two inches nearer the point, which must give more power.

The Saw being let into the handle on a circle, has a perfect bearing, which, with the new screws, makes it stronger and almost impossible to work loose, and avoids the unsightly gap that is seen on the back of the old style handle. All the above features are patented.

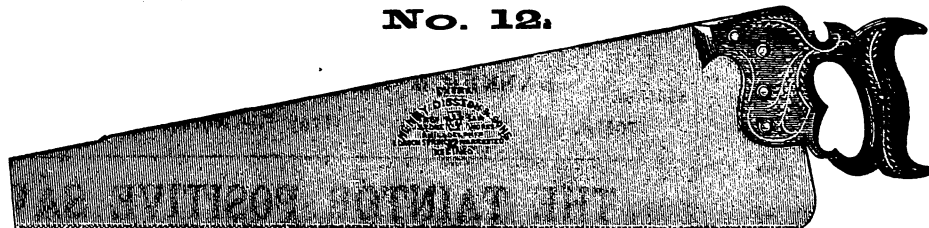
Our New No. 16 Premium Saw.



AN EXTRA FINE SAW IN EVERY RESPECT.

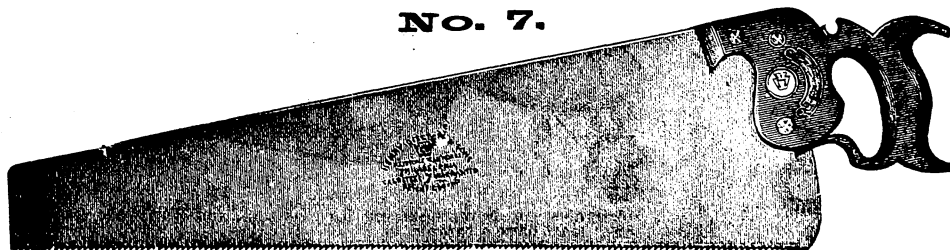
Having the Latest Close up Handle, Spring Steel Blade, Extra Thin Back, Finely Grained, with an Apple Handle and Four Brass Centennial Screws.

No. 12.



DISSTON & SONS' Extra Refined London Spring Steel, Selected and highly Polished Blade, Handle Carved and Polished, 4 Improved Brass Screws, the finest Hand Saw manufactured.

No. 7.



DISSTON & SONS' Cast-Steel, Warranted, Beech Handle, Polished Edge, 4 Improved Screws, Grained Blade.

"POCKET

EDITION

OF

THE

SAWYER "

and

"LUMBER-

MAN'S

HAND

BOOK,"

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ASK YOUR DEALER TO ORDER THEM FOR YOU.

HENRY DISSTON & SONS

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Keystone Saw. Tool. Steel and File Works, Philadelphia. Pa.

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THE LARGEST AND MOST COMPLETE FILE WORKS IN THE WORLD.

3000 VARIETIES FILES
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For Superiority



Manufacture and keep in stock a full line of FILES and RASPS only, for which we claim special advantages over the ordinary goods; and ask domestic and foreign buyers to allow us to compete for their trade.
Superiority acknowledged wherever used, sold or exhibited.

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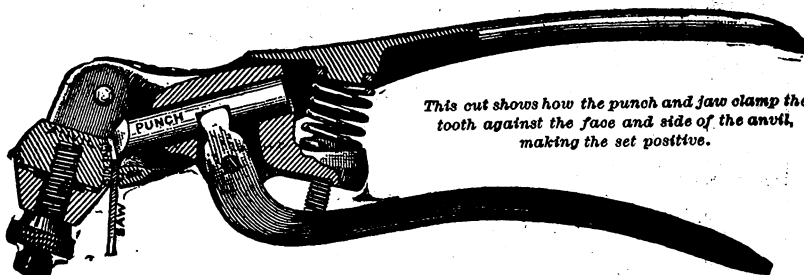
CRUCIBLE
STEEL.**"TROJAN" HORSE RASPS.**LOWEST
IN
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BANKER & WHITE,

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(Troy File Works.)

THE TAINTOR POSITIVE SAW SET.

This cut shows how the punch and jaw clamp the tooth against the face and side of the anvil, making the set positive.

Mechanics are now inquiring for this tool, and Hardware Dealers should have them in stock, or at least have a sample.

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DEAR SIR:—Have tried your Saw Set, and find it the best in every particular and have used a great many different kinds for twenty years.

Yours, etc.,

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For Prices and Discounts, address

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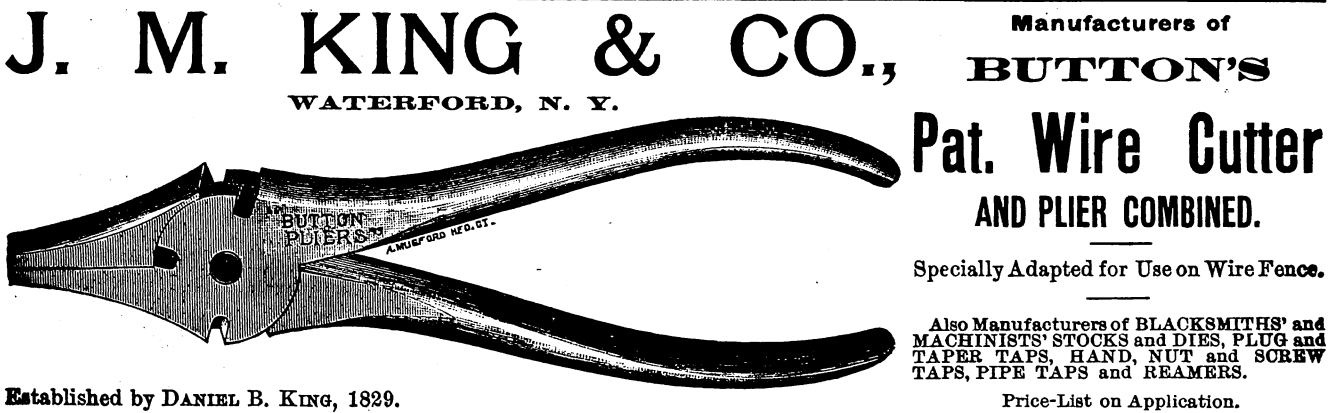
84 and 86 Chambers Street, New York.



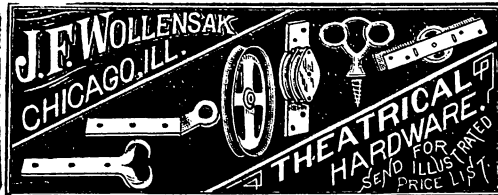
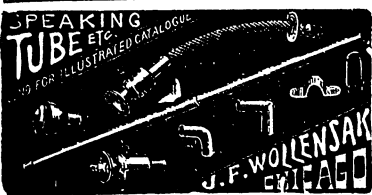
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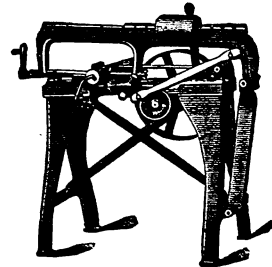


Established by DANIEL B. KING, 1829.



**Cuts off any size
or Shape of Metal**

**Up to 4½
Inches**



No skill required to run it. When bar is cut off the machine automatically lifts the saw from the work and stops.

The pressure on the saw is much greater on the forward stroke than on the return.

THIS IS THE MOST PRACTICAL MACHINE FOR THE PURPOSE ever offered to the trade.
No shop can afford to be without it.

Satisfaction guaranteed. Price, \$25.00
STOVER NOVELTY WORKS, 22 River St., Freeport, Ill.

ACME CUTTING TOOLS.

Made in all Sizes.



**SOLID STEEL ACME PLIER
AND WIRE CUTTER.**
Made with cutters of best steel.



ACME CUTTING NIPPER.
Jaws of Choiceest Tool Steel, dove-
tailed into the head, making it as
strong as solid steel.

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Extension and Single. Fire, Railroad and
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LAWN SWINGS.

Window Jacks and Swing Scaffolds. Trade discount 20 and 5% list. We pay the freight. Catalogue Furnished.

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Have established and maintained their reputation, for superiority,
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SOLE AGENTS FOR THE UNITED STATES, AND THE CANADAS.
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CORPORATE MARK,



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—MANUFACTURERS OF—

Pocket and Table Cutlery, Scissors, Razors, Erasers, &c., &c.

These goods have fully maintained their reputation as the best cutlery in the world for over
ONE HUNDRED AND FIFTY YEARS.

Any Infringements of our Name and Corporate Mark will be promptly prosecuted.

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Established 1836.

ALFRED FIELD & CO.

93 Chambers and 75 Reade Streets,

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**HARDWARE CUTLERY GUNS ANVILS
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SOLE AGENTS FOR

Joseph Rodgers & Sons, Best Cutlery in the world; W. K. & C. Peace, unrivaled Grass Hooks. Straw Knives and Scythes; Joseph Elliot & Sons Celebrated Razors; Peugeot Frères, "French Toilet" and other Clippers; L. Hugoniot Tissot Fine Steel Pliers, &c.; Eley Bros., Caps, Wads Cartridge Cases, &c.; Webster & Horsfall, Steel Wire of every description.

Send for Rodgers' New Illustrated Catalogue

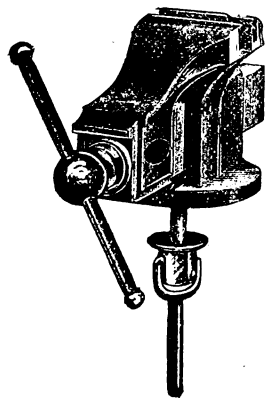
We manufacture all kinds of

EDGE TOOLS

of highest grade and sell at proper prices
Send for Illustrated Price-List.

Buffalo Edge Tool Works

308, 310 and 312 William Street,
BUFFALO, N. Y.



**HOLLANDS'
OFFSET JAW
VISE.**

Specially adapted for drill press work where chucks cannot be used and equally good for special or regular bench work.

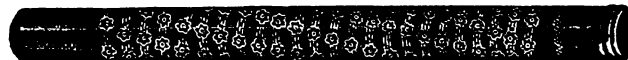
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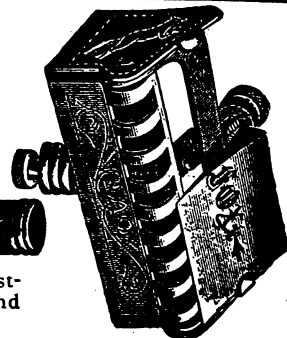
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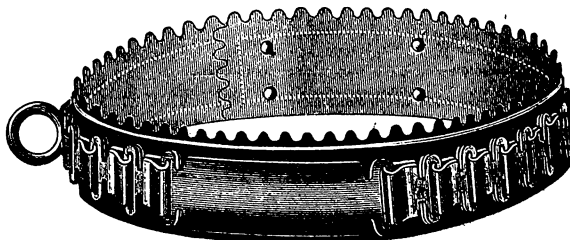
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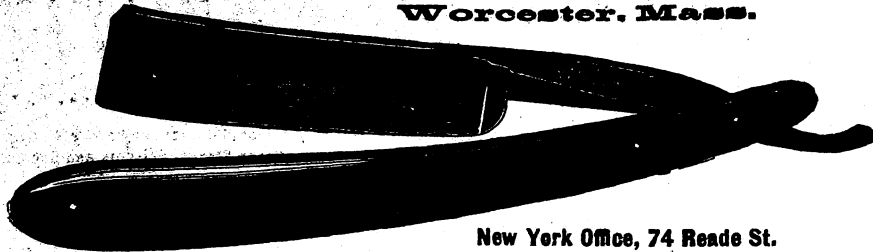
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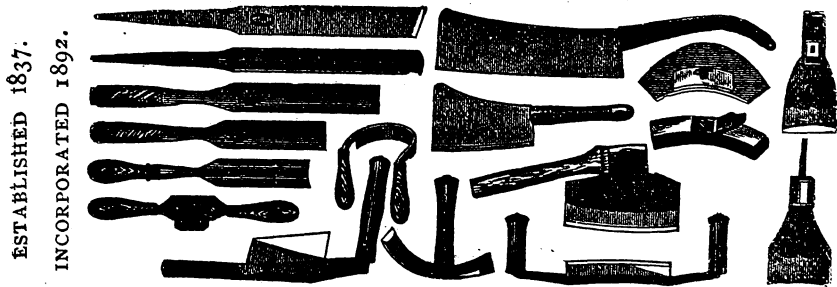
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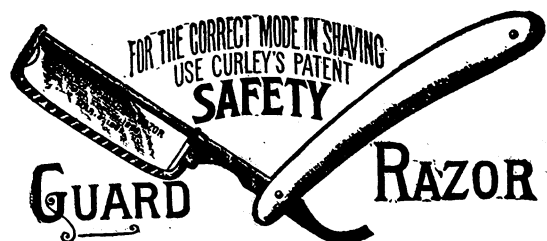
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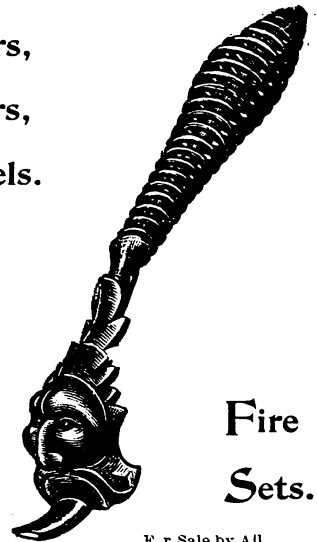
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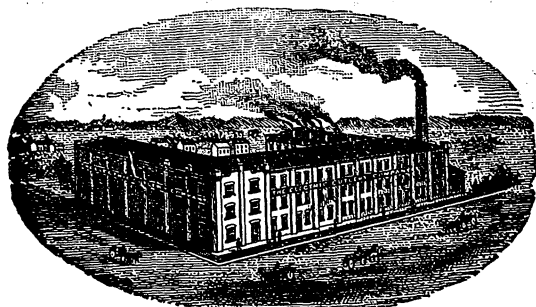
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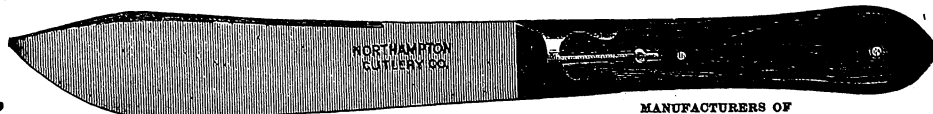
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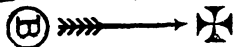
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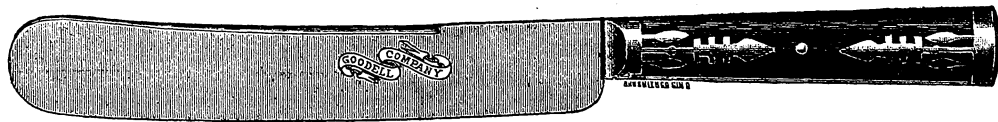
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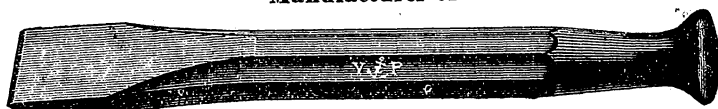
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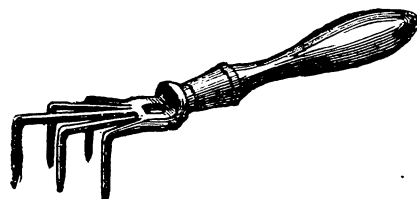
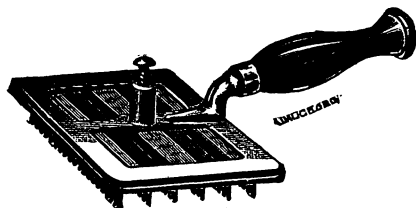
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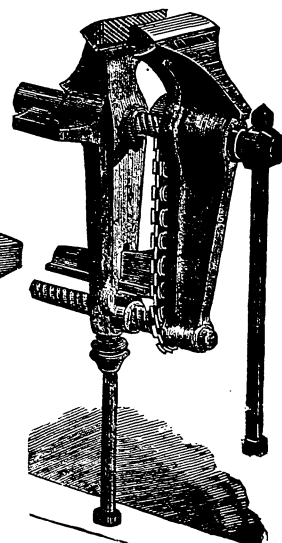
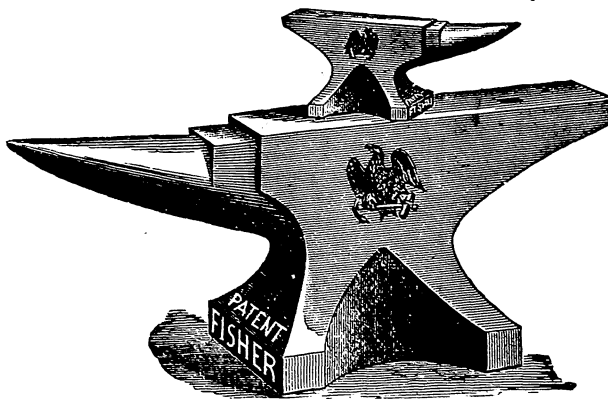
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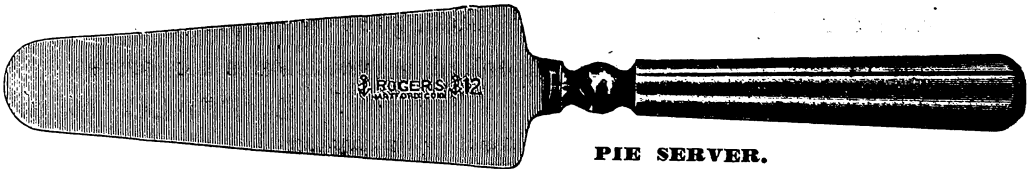
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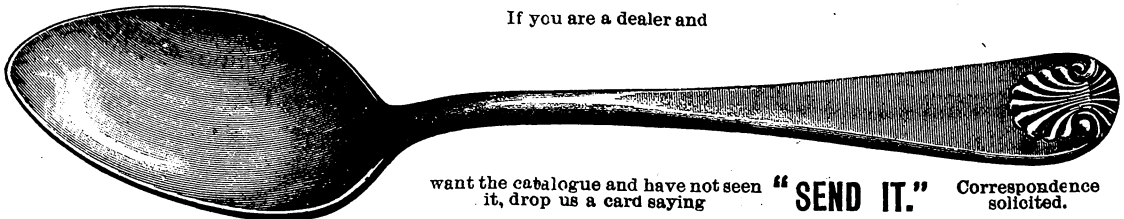
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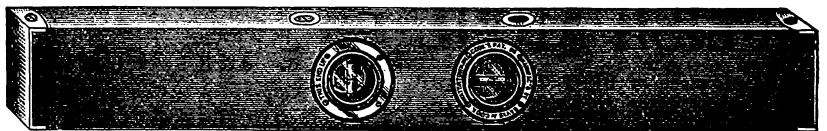
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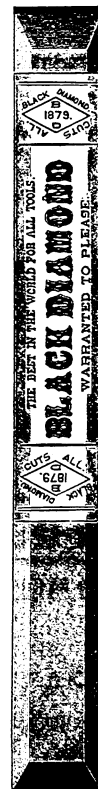
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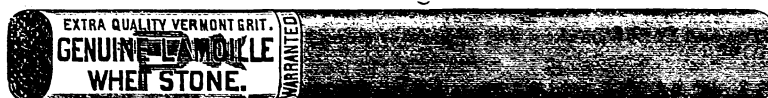
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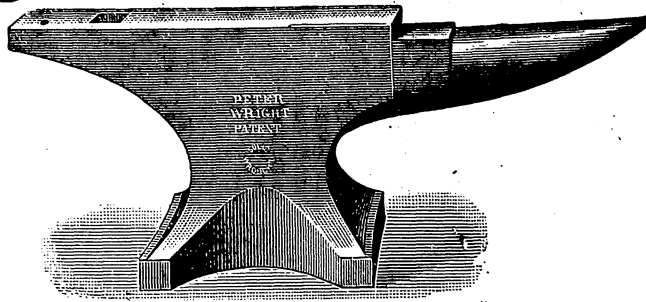
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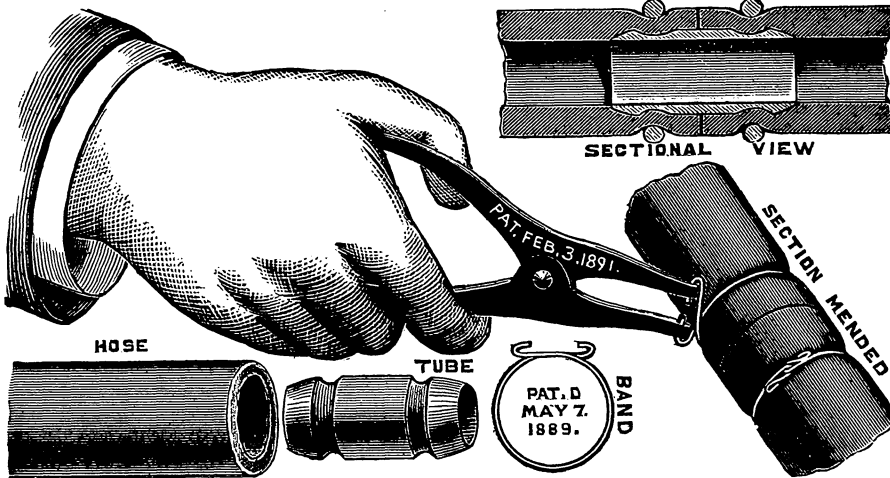
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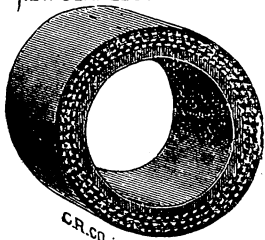
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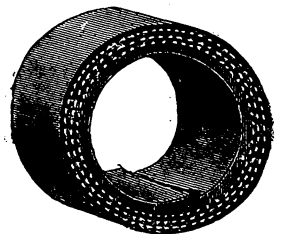
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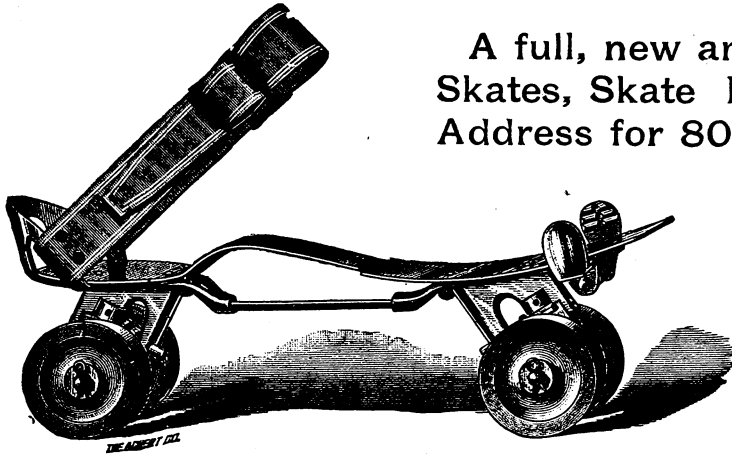
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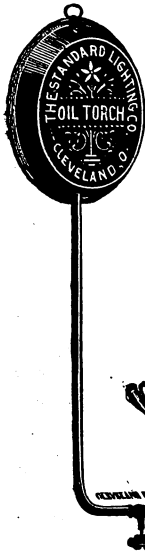


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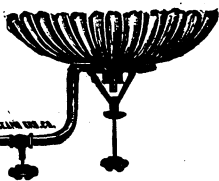


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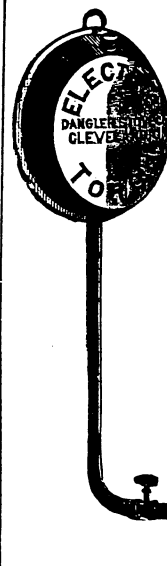


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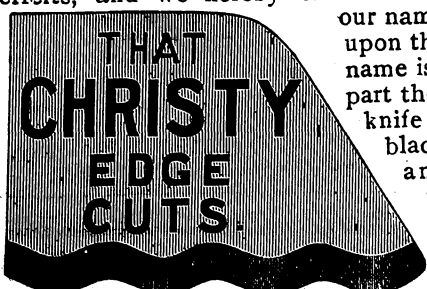
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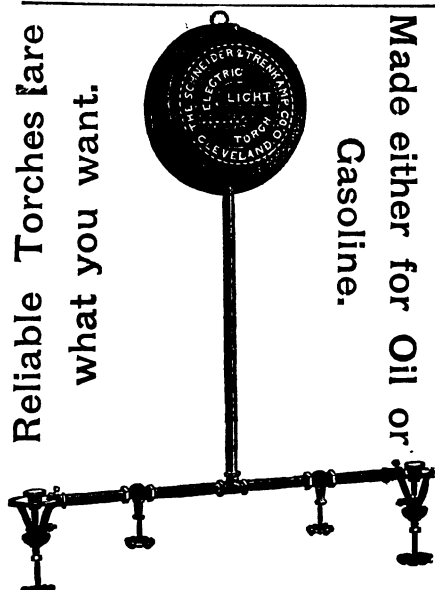
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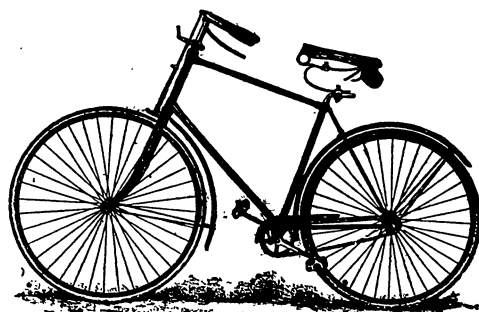
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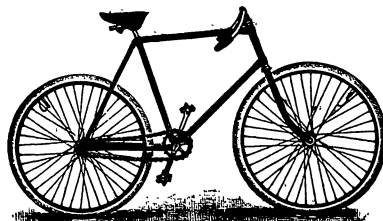


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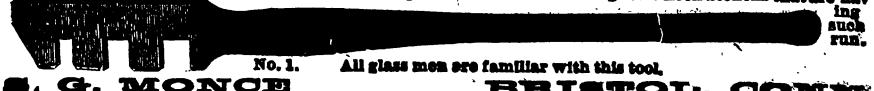
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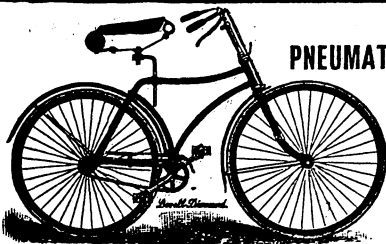
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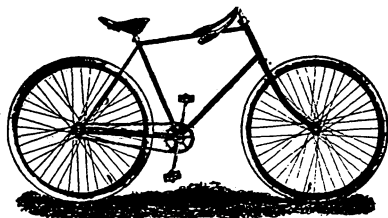


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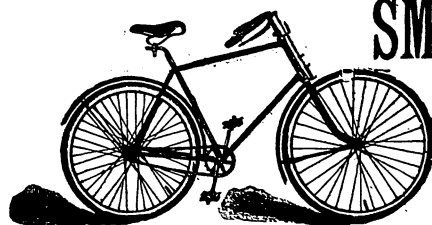
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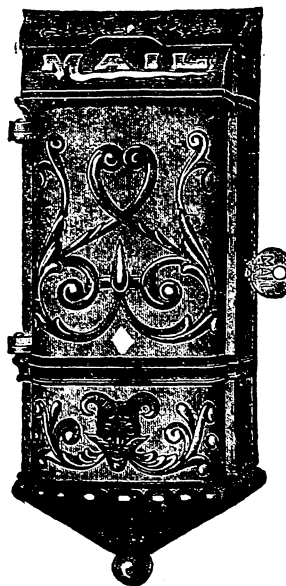
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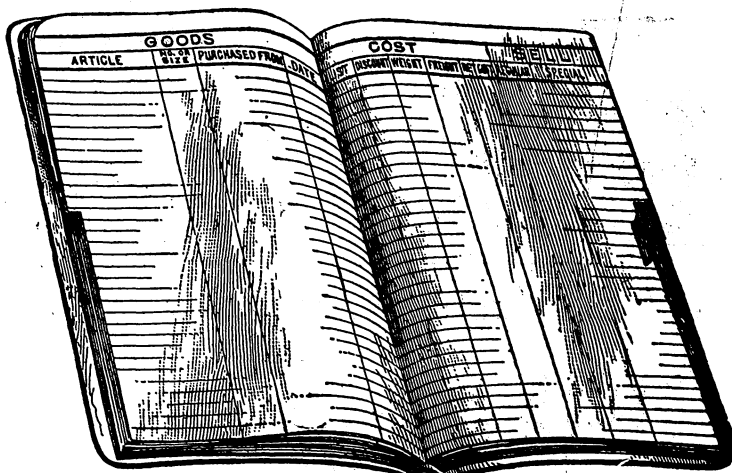
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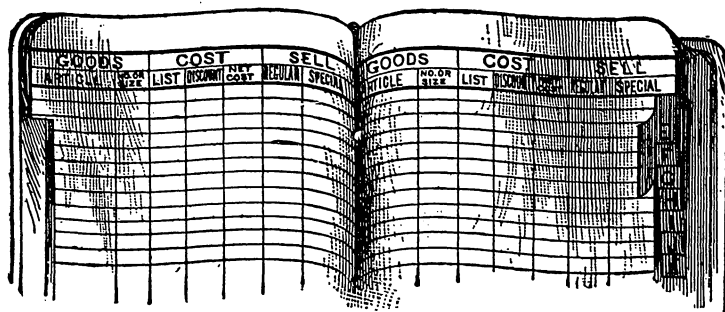
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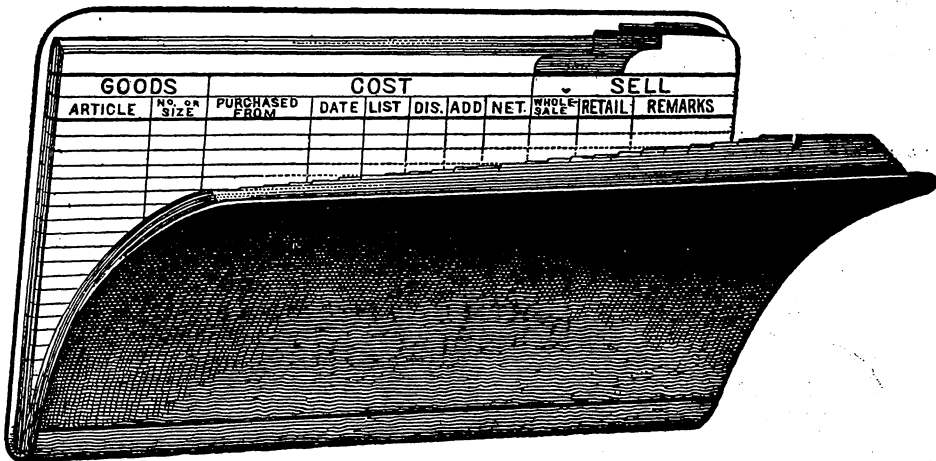
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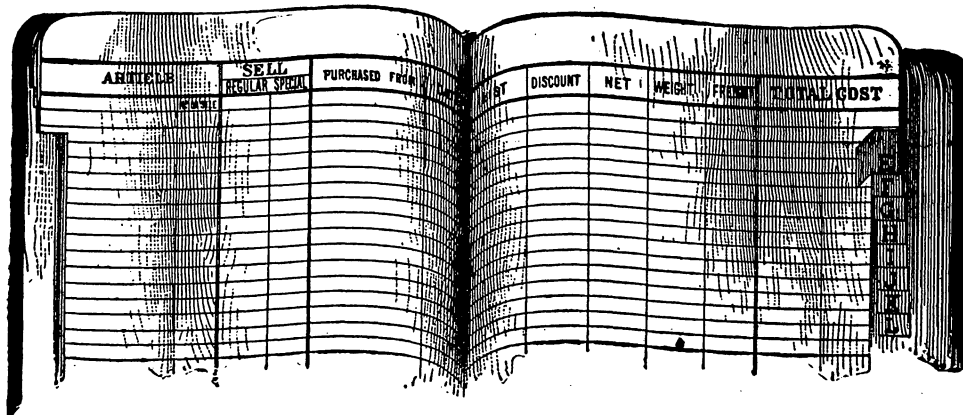
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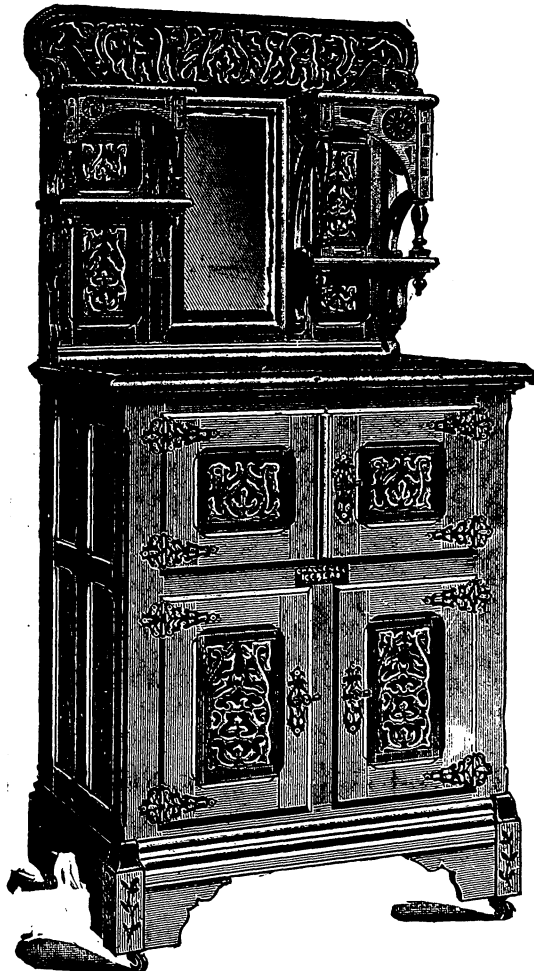
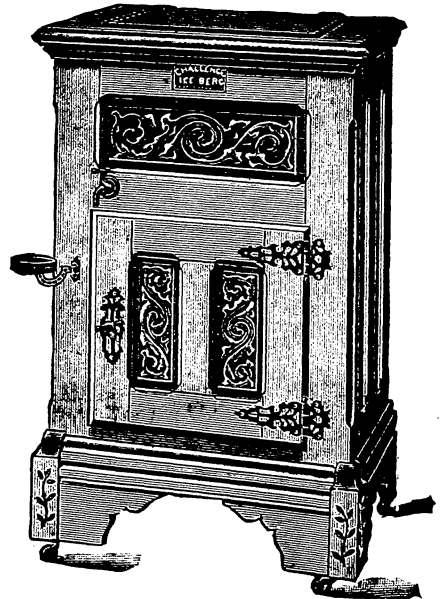
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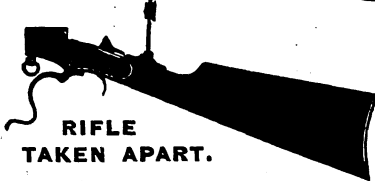
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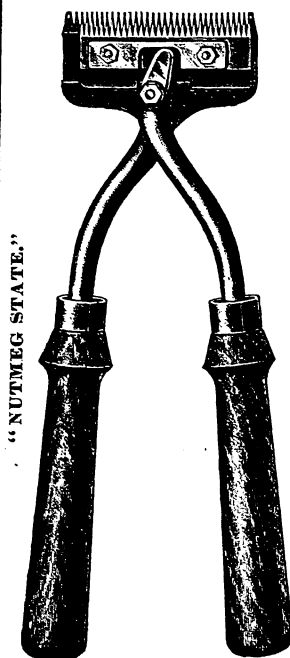
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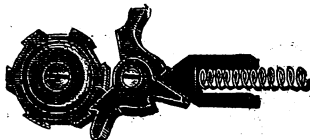
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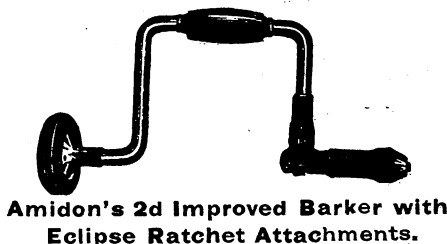
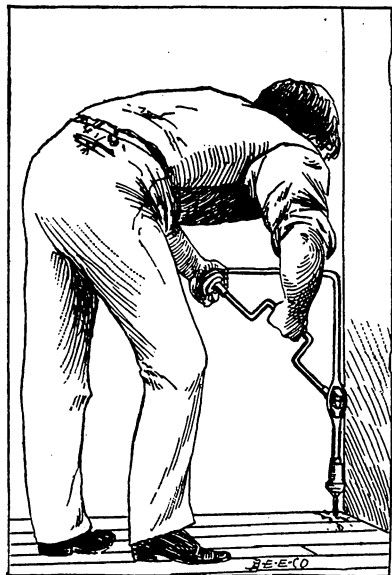
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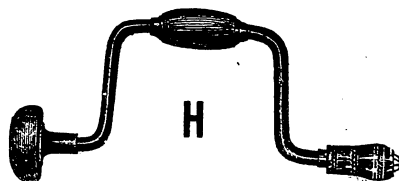
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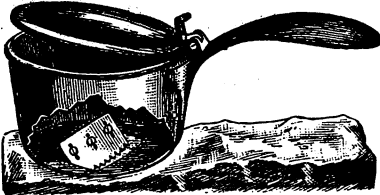
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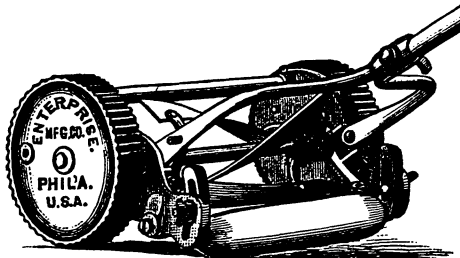
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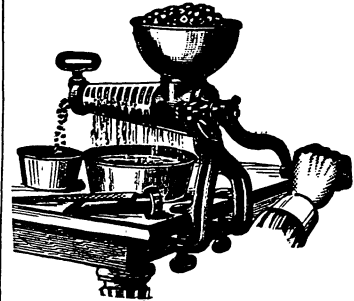
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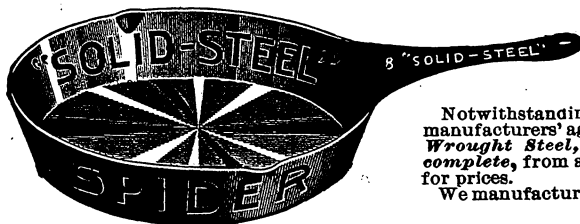
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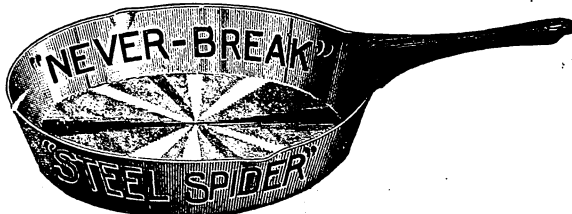
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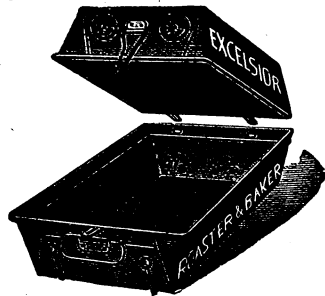
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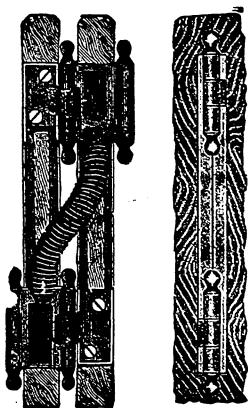
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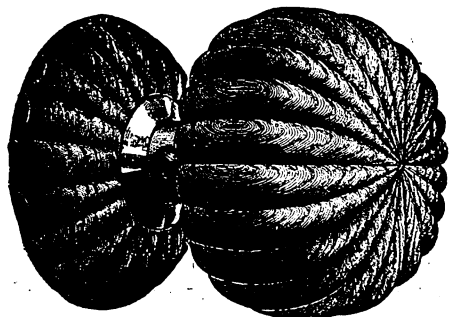
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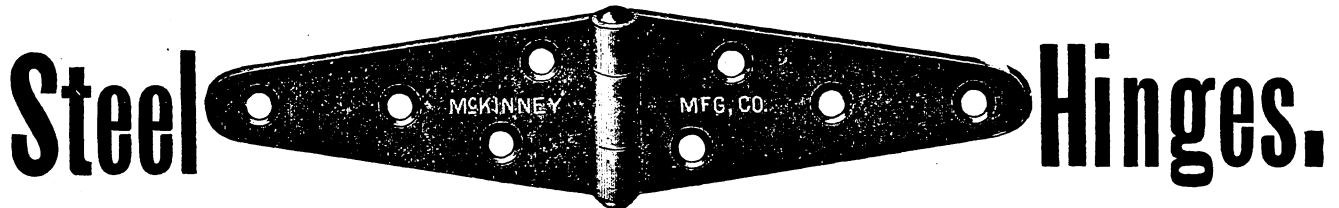


WE CLAIM



That one pair of our Celebrated Steel Hinges will outwear two pair of the Flimsy Invention now being forced upon the attention of the trade.

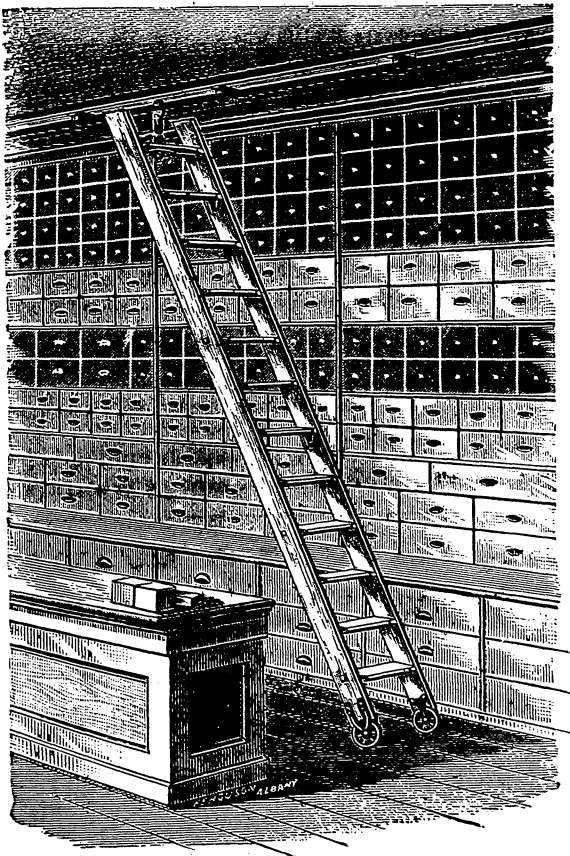
McKINNEY MFG. CO., ALLEGHENY, PA.



SEND FOR LIST.

"NONE BETTER."

THE "NOISELESS" STORE LADDER.

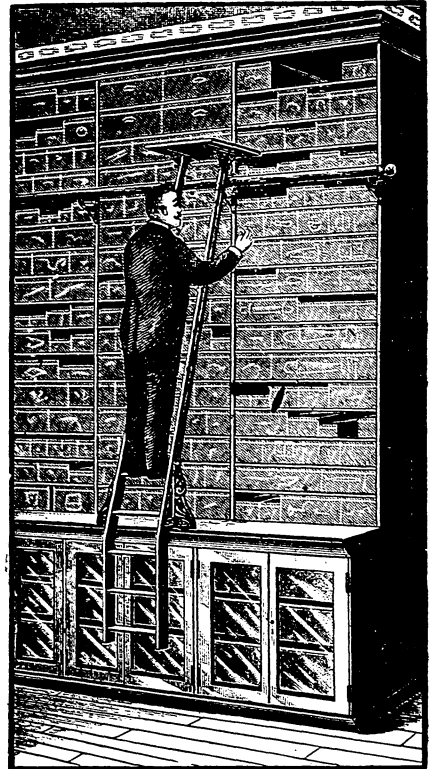


The latest and best. Perfectly noiseless. Neat in appearance.

Manufactured by

M. CROISSANT,

ALBANY, N. Y.



THE BICYCLE STEP LADDER

The Newest, Neatest, Simplest, Easiest Operated and Safest Store Ladder made.

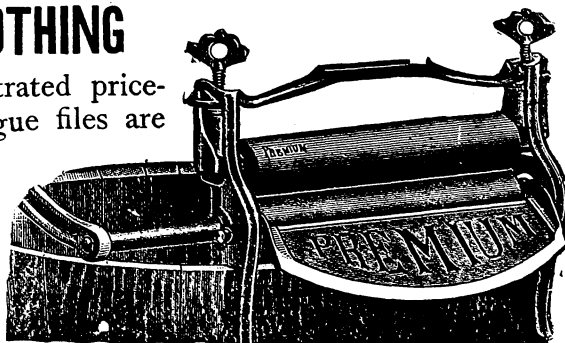
Ladders are not Suspended, but Supported from below on wheels. Move easier with operator on than others when empty. Highly finished, and very handsome. Made in different grades and prices to suit.

Send for illustrated catalogue and prices. See this space next week for other styles.

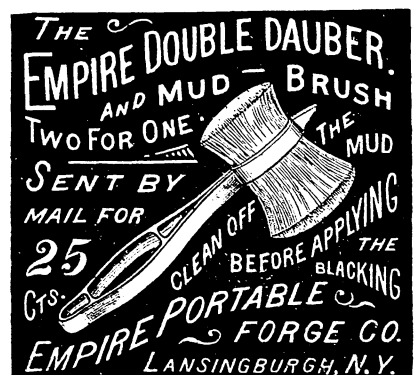
The Bicycle Step Ladder Co., 184 & 186 Clark St. Chicago, Ills.

IT COSTS NOTHING

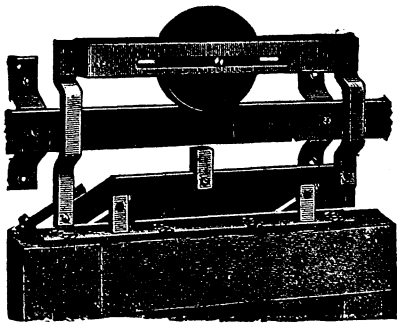
to send for our illustrated price-list, and your catalogue files are incomplete without it. Write to the Factory, Montpelier, Vt., or to our Chicago store, 68 Lake St.



COLBY WRINGER COMPANY.



N. Y. Office, 103 Chambers St., W. H. QUINN, Manager



LANE'S PATENT NOISELESS STEEL PARLOR DOOR HANGER.

This Hanger is made of Steel.
The Wheel is also Steel, except the filling or tread.
The Track is of Steel—a single one only.
The Hanger is Anti-Friction.
More nearly Noiseless than any other.
Ease of adjustment.

Can be erected with half the labor others require.
Track will not swell, shrink or warp out of true.
No cutting of doors.
No matching of hardware.
Simplicity in all its parts.
Durability.

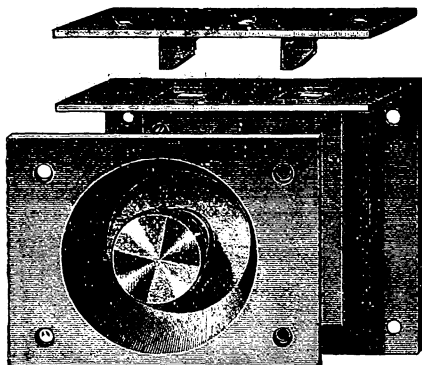
ALSO LANE BARN DOOR HANGER AND TRACK. SEND FOR CIRCULARS.

Manufactured by

LANE BROS., Poughkeepsie, N. Y.
JOHN H. GRAHAM & CO., General Agents, 113 Chambers St., New York.

THE KEYLESS LOCK CO.

197 SOUTH CANAL STREET, CHICAGO,
Manufacturers of



$\frac{1}{2}$ Size.

Chest Lock, No. 120.

DROP US A POSTAL AND GET OUR CATALOGUE AND TRADE PRICES.

The Craig Anti-Dial Combination Locks.

For use on Houses, Stores, Desks, Drawers, Lockers, etc.

We Protect the Hardware Trade.

We Appoint No Agents.

These Goods Will Not Stay on Your Shelves.

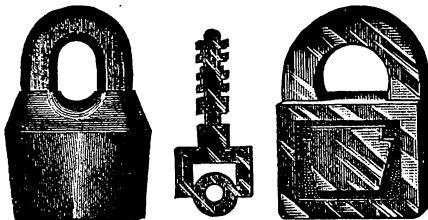
All inquiries from consumers are referred to Hardware Dealers who keep our Goods. (See our "ad" in Century, Scribner's and Harper's.)

WE GUARANTEE EVERY LOCK.

KEYSTONE LOCK WORKS,

—Established 1879.—

E. T. FRAIM, Lancaster, Pa., U. S. A.
MANUFACTURER OF



Patent Inter-Locking Tumbler Scandinavian or Jail PADLOCKS, in 56 grades and sizes. Key and Self-Locking. Brass, Bronze, Steel and Malleable Iron. Red, Black, Bower-Barff and Bright Brown finish. Also a full line of fine flat padlocks in Bronze and Steel. All fully described and illustrated in our new catalogue, furnished free to the trade.

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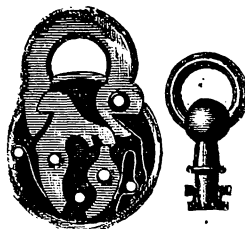
PATENT PERFECTION PADLOCK

Eight Tumblers. Key Turning Both Ways.

Sizes; $\frac{1}{4}$ inch to $2\frac{1}{2}$ inches; of cast bronze. Defies competition for quality and price. No steel or iron used, cannot rust, and cannot be picked. Also, $\frac{1}{2}$ and $\frac{3}{4}$ inch Padlocks, opened with a common pin, in brass and nickel, for cats and small dogs. The best Railroad Switch and Car Lock in the world. Adopted by the United States Treasury for bonded warehouses.

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Merit Always Wins.

THE CALDWELL SASH BALANCE

Has been the standard for five years.

Write for our new catalogue of Hardware Specialties.

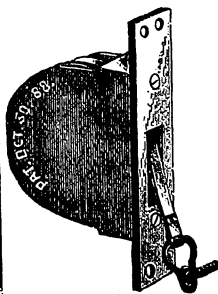
CALDWELL MFG. CO., Rochester, N. Y.

READING HARDWARE CO., Agents.

81 Reade St., New York.

514 Commerce St., Philadelphia.

78 Wabash Ave., Chicago.



HARDWARE DEALERS

CAN RECOMMEND THE

CHAMPION METAL WINDOW SASH CHAINS

to their customers as a reliable substitute for Sash Cords, very strong and lasting (some in daily use ten years), and gives thorough satisfaction wherever used. The patented attachments are very simple and can be applied to any window.

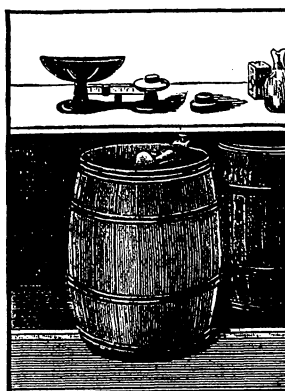
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"THOMAS MORTON"

65 Elizabeth Street,

Write for Prices.

NEW YORK.



Wonder Somebody Didn't

THINK OF IT BEFORE!

The Perfection Barrel Swing.

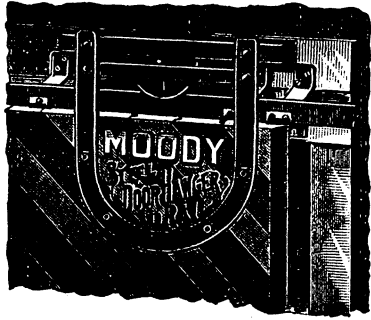
A simple device, readily attached to any Pantry, Cupboard, Broad Shelf or under the counter in a Grocery or Hardware Store, for swinging a barrel to get at the contents easily. Price, \$1. All Hardware dealers will supply them.

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THE LEAVITT MACHINE CO.

ORANGE, MASS.

VICTOR MFG. CO., Newburyport, Mass STEEL RAIL.



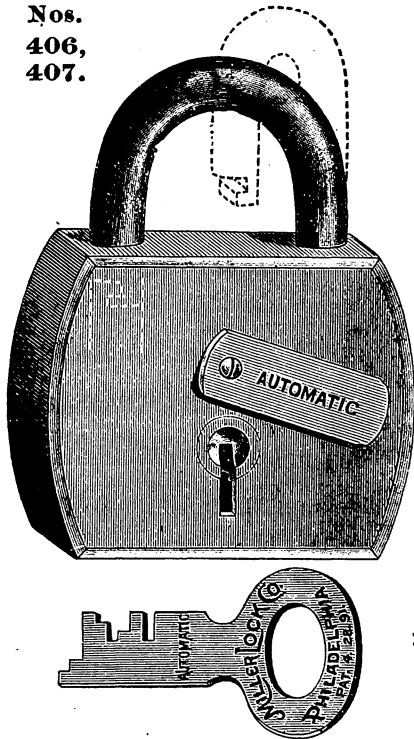
Showing one-half set of hangers attached to door.



The Only Bracing Bracket Made.

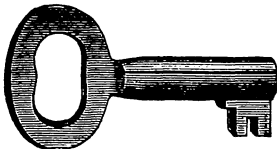
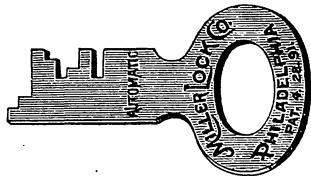
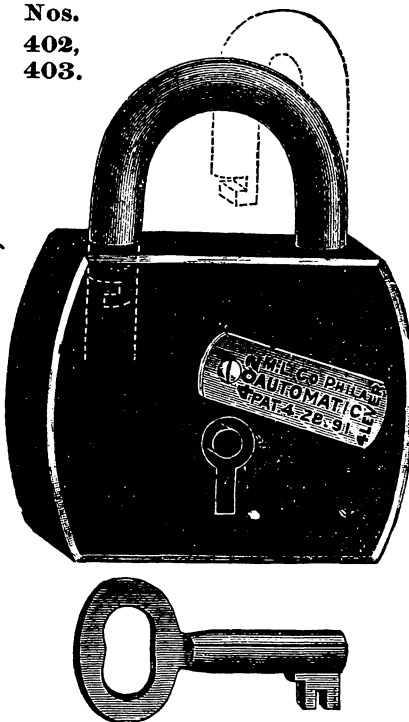
HANGERS.	PRICE-LIST.	Per Doz. pra.
No. 5, to run 6 feet, 3 1/4 in. wheel,	-	\$10.00
No. 6, to run 10 feet, 4 1/2 in. wheel,	-	15.00
No. 7, to run 15 feet, 5 1/2 in. wheel,	-	22.00
RAIL, per foot.....		6 1/2 cents.

Nos.
406,
407.



"AUTOMATIC" PADLOCKS, Two Styles.

Nos.
402,
403.



When made special, to pass a sample key, also when made with keys alike to pass, and as well when more than 50 changes are required in a set, the price per dozen locks is advanced 50 cents net.

Nos.	Keys.		Weight.	Per Dozen.
400,	1,	Brass Plated, Cyclo's Lock.....	1 oz.	\$8 60
402,	2,	Steel, dark finish.....	4 1/2 "	8 67
408,	2,	Brass, bright ".....	4 1/2 "	8 00
406,	2,	Steel, dark ".....	4 1/2 "	7 20
407,	2,	Brass, bright ".....	4 1/2 "	8 50

For Sale by Best Jobbers, and by all Live Retailers.

MILLER LOCK CO., Lock Manufacturers, PHILADELPHIA, PA.

Now Is The Time.

WE ARE READY
to book your orders for

APPLE PARERS

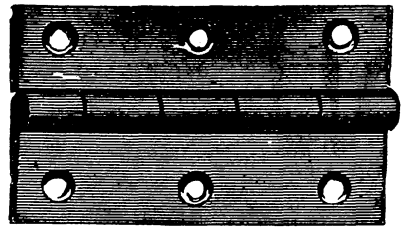
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Crown and Giant Sash Cord and Bell Cord. Braided and Twisted Picture Wire Spool Wire, Clothes Lines, Ventilator Cords, Garden Lines, Chalk Lines, Annunciator Wire.

Send for Catalogue, Samples, Prices.

Bright Wire Goods, Picture Nails, Knobs, Hooks, Chain, Clothes Line Pulleys, etc.

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Cast Brass Butt Hinges

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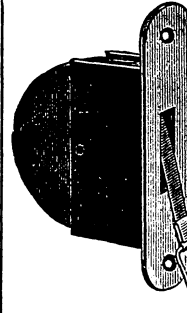
W. & J. TIEBOUT,

Nos. 16 & 18 Chambers Street, New York.

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BRASS, GALVANIZED & SHIP CHANDLERY
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Indispensable in Building Pullman Steel Frame Sash Balance.



- 1st. Because they require no box frames, and can be used in old as well as new houses
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- 3d. Cost less money than weights and cord.
- 4th. Last three times as long.
- 5th. Warranted 10 years.

Write us for Catalogue, or any special information and don't get our Balance confused with others of inferior makes.

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New York Office, 142 Chambers St.

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COMMON SENSE SASH BALANCE.



The Best and most Practical substitute for weights invented. The most Durable, the Cheapest and best device for all ordinary windows. Balances when in position are out of sight. No rivets, bolts or screws are used in putting it together, so that nothing can get out of order or need repairing. No cutting, boring or marring the sash, as the Balances are let into the jamb.

Manufacturers of Sash Balances, Sash Locks, Sash Lifts, Monitor Sash Irons.

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107 State Street, Rochester, N. Y.

No more **S**lamming!
...Doors!

Our Combination

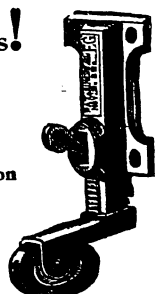
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Bumpers

Holds
door
in
any
position


For sale by all Jobbers. Write
for Circulars.

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FROST'S ANTI-RATTLE
 Pat. Jan. 20, 1880.
Out One-half Size.
 Sample pair sent to any hardware or saddlery firm by addressing
The Frost Thill Spring Co.,
 Boston, Mass.

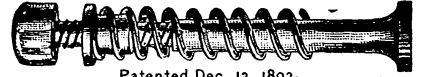
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BIRMINGHAM, CONN.,
 MANUFACTURERS OF
A Full Line of Carriage Hardware
ALSO SPECIAL FORGINGS.
 Estimates cheerfully given. Send for Catalogue

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STOVER MFG. CO.
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Motley's Adjustable Sash Holder



For Windows, New or Old,
 In Buildings, Cars, Steamboats, Carriages, etc. Also
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Will mark in ten minutes what would take five hours to do the old way, saving the price of it the first time used.

It always marks the centers accurately, so the pulleys are sure to fit and saving a great deal of refitting. They are simple, durable, handy, and sell at sight.



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Saves 2 cents a window in cost of material, saves time in putting on and makes a neater job than tying knots. Send for circulars and prices

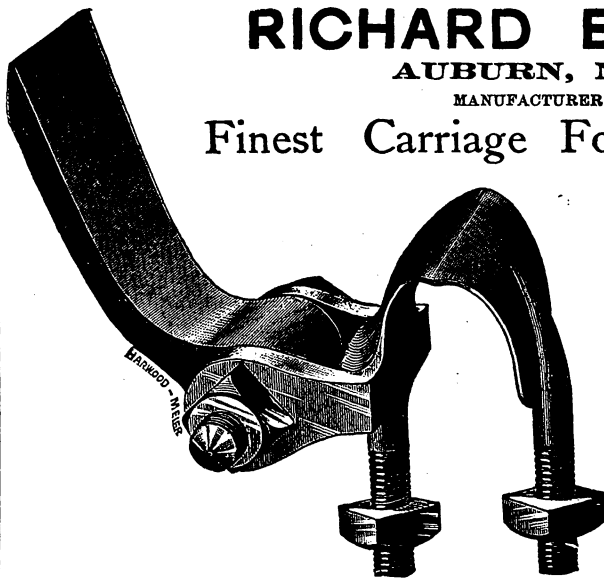
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All Tags and Labels on Covert Goods bear the above Trade-Mark, and are sold by all Leading Jobbers in General and Saddlery Hardware at Manufacturers' Prices.



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AUBURN, N. Y.,
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Finest Carriage Forgings, Couplings, Clips, King Bolts, Fifth Wheels, &c. Manufacture a full line. Special Drop Forgings.

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THE SCIENTIFIC SWEEP MILL

FOR TWO HORSES.

Grinds EAR CORN and SMALL GRAINS.

Special Cob Breaking Device and peculiar dress of Grinders. Gives BETTER WORK, MORE OF IT, WITH LESS WORK TO TEAM than others. Send for catalogue of this and

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THE FOOS MANUF'G. CO., SPRINGFIELD, OHIO.

FULLY GUARANTEED.
 SENT ON TRIAL.



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MANUFACTURERS OF THE

"TELEPHONE"

AND OTHER HIGH-GRADE FAMILY

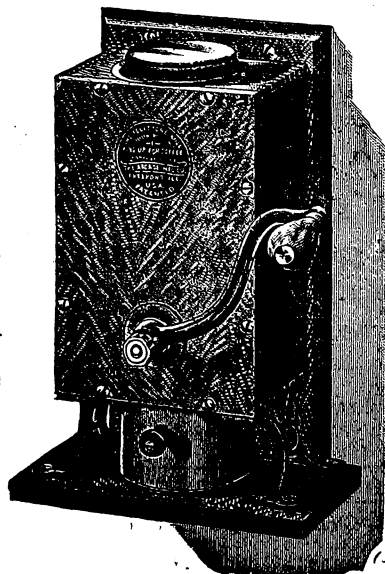
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The "TELEPHONE MILL," for grinding Coffee or Spices, is made of hard wood, highly finished and nickel trimmed. The only boxed mill which can be fastened on table, shelf or wall—holds a pound of coffee—self-feeding, and easily regulated to pulverize.

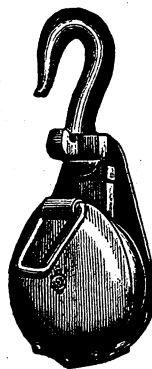
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 And Other Hardware Specialties.
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EAST FREEPORT, ILL.

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WHY USE WOODEN OR HEAVY STEEL BLOCKS WHEN THE STEEL AND IRON TACKLE BLOCKS



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The Cleveland Block Co.

CLEVELAND, OHIO, U. S. A.,
ARE BETTER IN EVERY WAY.

No waste material. Every ounce of weight in the line of strength. No clumsy outside straps or bolts. As light as wooden blocks and vastly more durable. They wear, but never break. Sheaves interchangeable.

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NOW IS THE TIME TO PLACE YOUR ORDERS FOR HAY BLOCKS.

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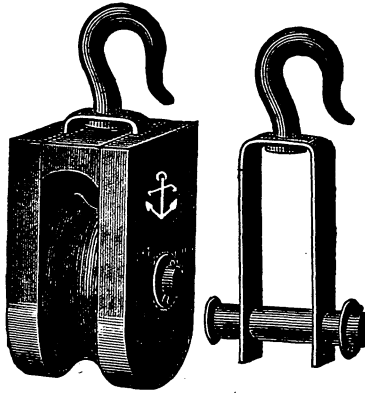
are the best for the least money. They have hard wood shells; wrought iron straps; forged steel hooks and hollow wrought iron axles perforated.

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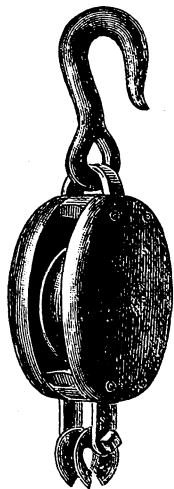
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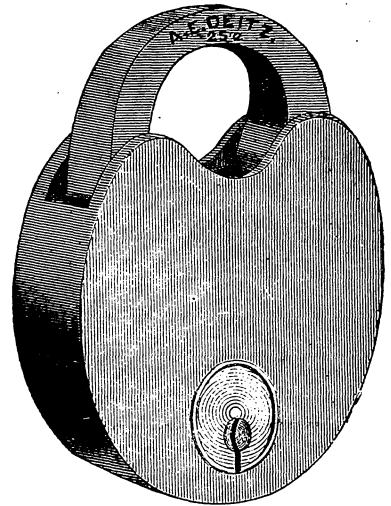
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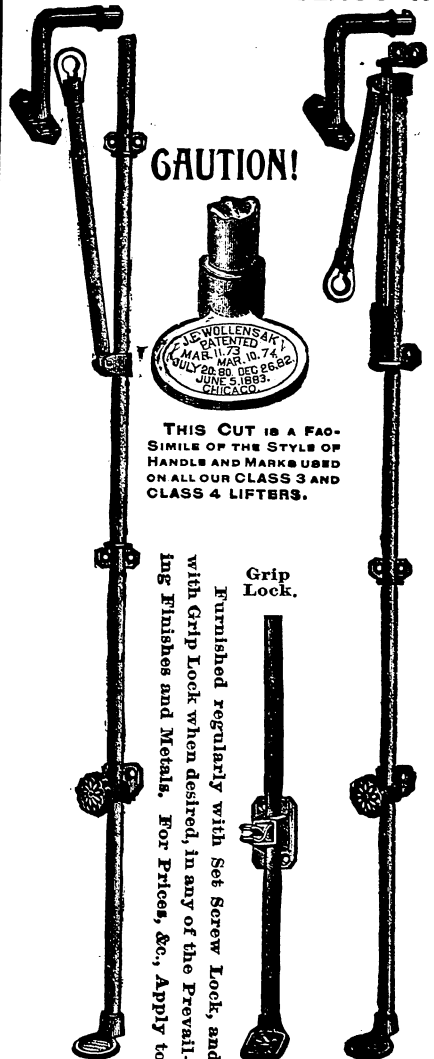
Transom...Lifters

OLD RELIABLE

J. F. WOLLENSAK'S PATENT.

CLASS 3.

CLASS 4.



CAUTION!

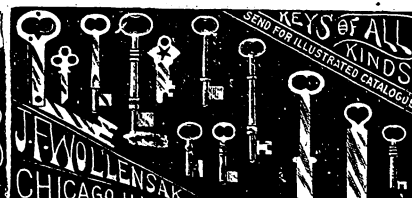
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Furnished regularly with Set Screw Lock, and with Grip Lock when desired, in any of the Prevailing Finishes and Metals. For Prices, &c., Apply to

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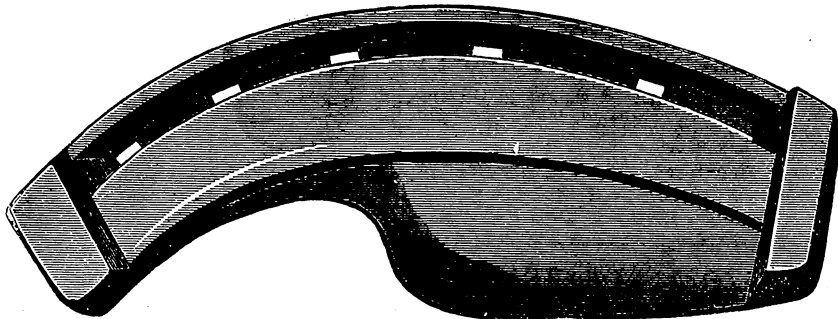


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CARRIAGE HARDWARE AND SPECIAL DROP FORGINGS.

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OX
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Our 1891 pattern is a modification of the style we have made for the past four years, giving additional strength to the web.

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Mount Carmel Steel Toe Calk Ox Shoes.

The Best and Cheapest in the World.



Blunt Calk. Seven Sizes.

Warranted
to outwear
any shoe made.

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"Burden Best"

Iron.

Boiler Rivets.

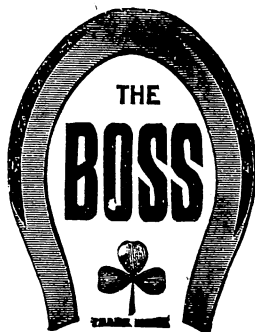
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Other "high grade" specialties in Rivets, Spikes, Splice Bars, Track and Machine Bolts, Blank Nuts, Stay Bolt Iron, Horse Shoe Iron, Bar Iron, &c.

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{ Correspondence invited }

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CARRIAGE MAKERS' HARDWARE,

MANUFACTURE THE LARGEST VARIETY OF

FORGED CARRIAGE IRONS

Of Best Material and Workmanship.

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Manufactured by the NATIONAL HORSE NAIL CO.,
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All Sizes. All Patterns. All Warranted. Sold Everywhere.

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Elegant Iron.
Beautiful Shape.

HORSE SHOES,
Light, Medium and Heavy.
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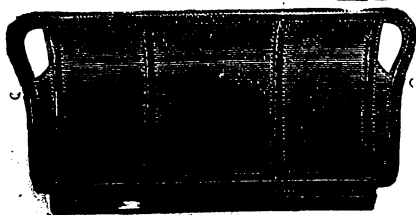
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FINE QUALITY
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BOSTON, MASS. Sharp Calks.

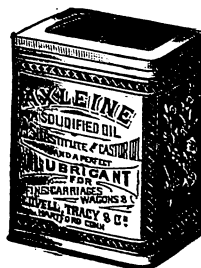
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PHOENIX HORSE SHOE CO.

POUGHKEEPSIE, N. Y.

New York Office, No. 66 Reade Street.

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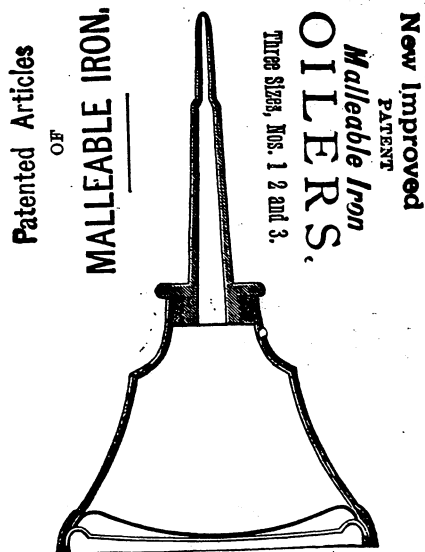


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M. I. Hanging Lamps.

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New Pattern Heavy Screw Clamps.
Strongest in the market.

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MALLEABLE IRON CASTINGS
of superior quality, and Hardware Specialties
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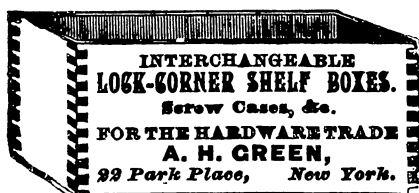
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Price Lists sent on application.

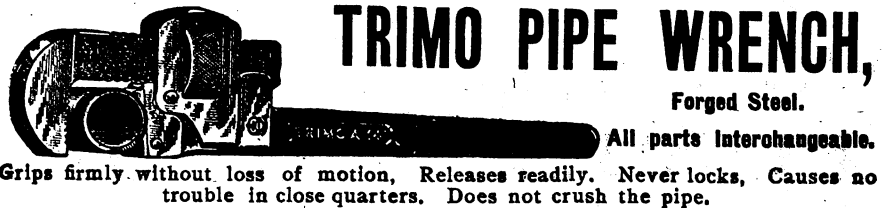


Case-Hardened Throughout.

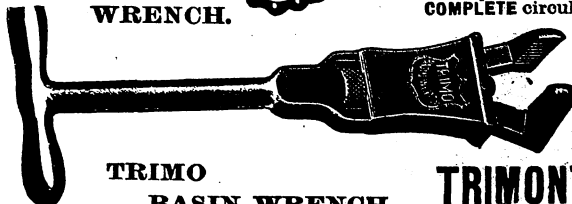
Parts Interchangeable.

This wrench not only combines the superior qualities of a Gas Pipe Wrench but also all the requisite combinations of a regular Nut Wrench, thus making a combination which has no equal. For Circulars and Price-List, address

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TRIMO
CHAIN
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Superior in strength and ease of operation.
COMPLETE circular grip. Never slips nor crushes.

Can be used with one hand and in closer quarters than any other Basin Wrench. Parts interchangeable.

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DROP-FORGED STEEL ENGINEERS' WRENCHES,

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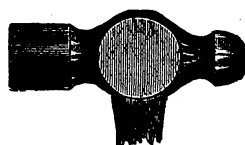
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Iron, Steel, Copper and Bronze Drop-Forgings;
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SUPERIOR TO ALL OTHERS IN DESIGN,

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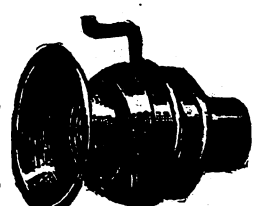
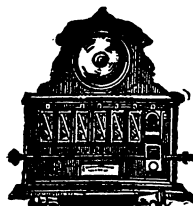
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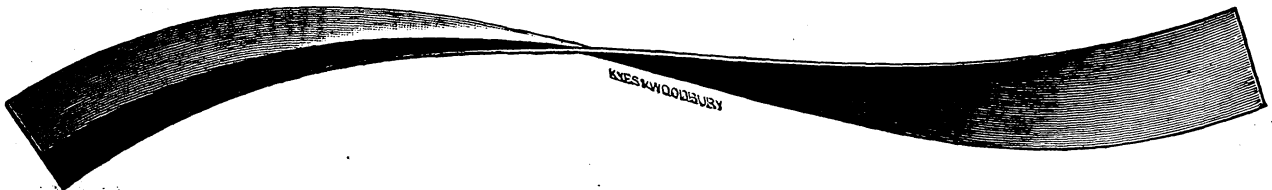
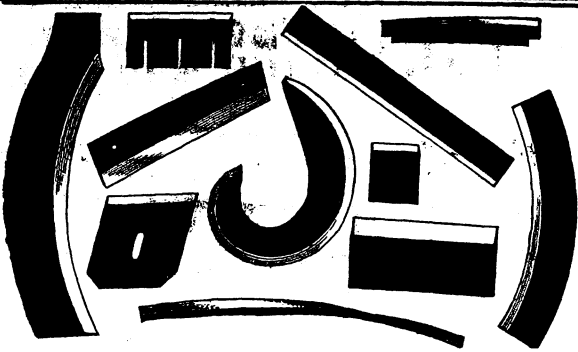
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Shear Blades and Strips, Moulding Cutter Plate, Die Stock for Leather, Cloth and Paper Cutting Dies. Lawn Mower and Hay Cutter Knives of every description.

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HERCULES.
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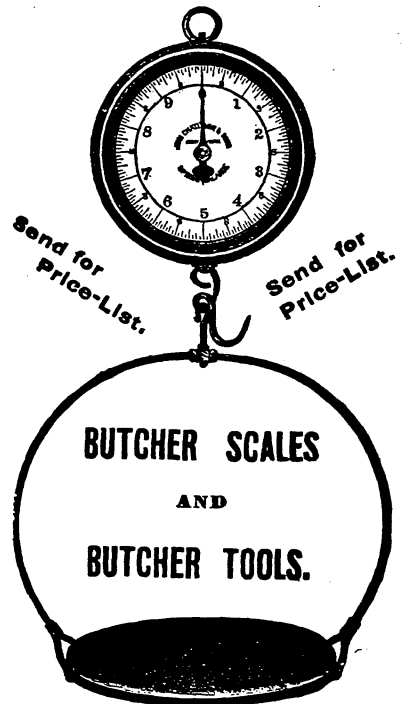
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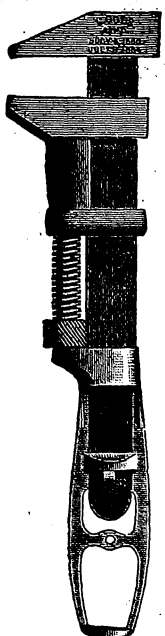


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Genuine Improved
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**Screw
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Sectional View Illustrates our New Knife Handle, showing Malleable Iron Frame and Shank of Bar keyed into position.

17 Straight Bar, Extra Long Nut for Screw in Jaw. 23

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SAMPLE 15¢.

SEAMLESS
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BRASS HINGE
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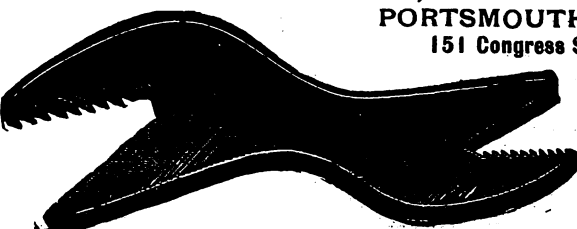
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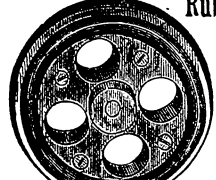
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Machinists, Carriage Makers, Blacksmiths, Mechanics, Spinners, Weavers, Carders, and in all Departments of Woolen and Cotton Mills, Farmers, Housekeepers, and in fact everybody that ever uses a wrench

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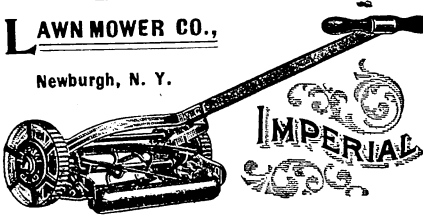
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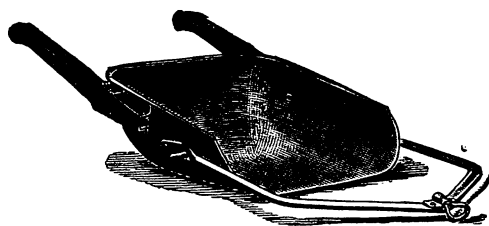
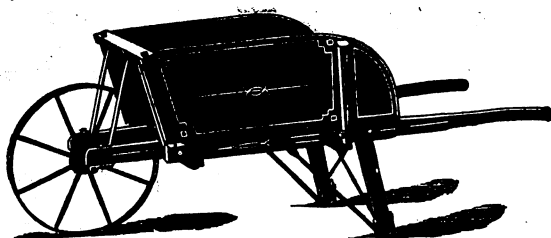
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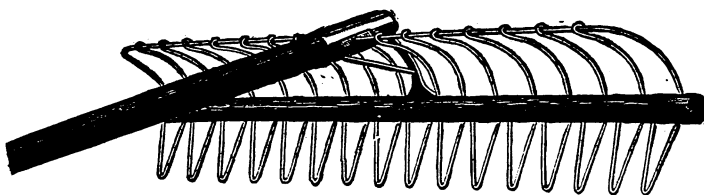
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LAWN RAKES. The "GEM" AND "DAVIS."

Both good and each the best. If you have not stocked up, better do so at once. Our prices are low.

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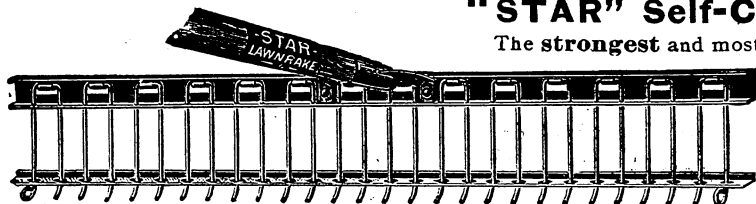


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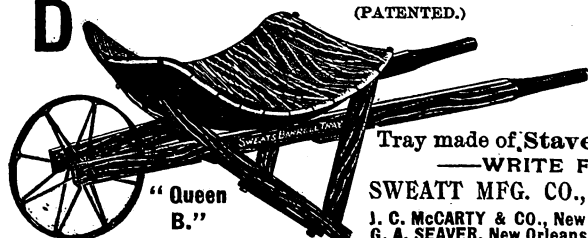


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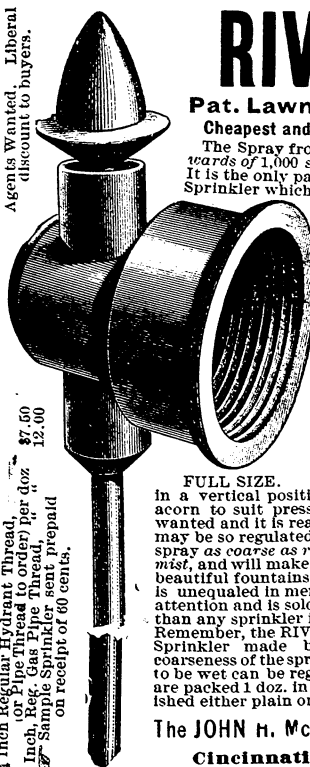
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Pat. Lawn Sprinkler
Cheapest and Best in Use.

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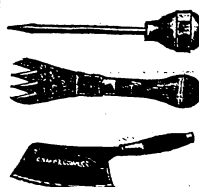
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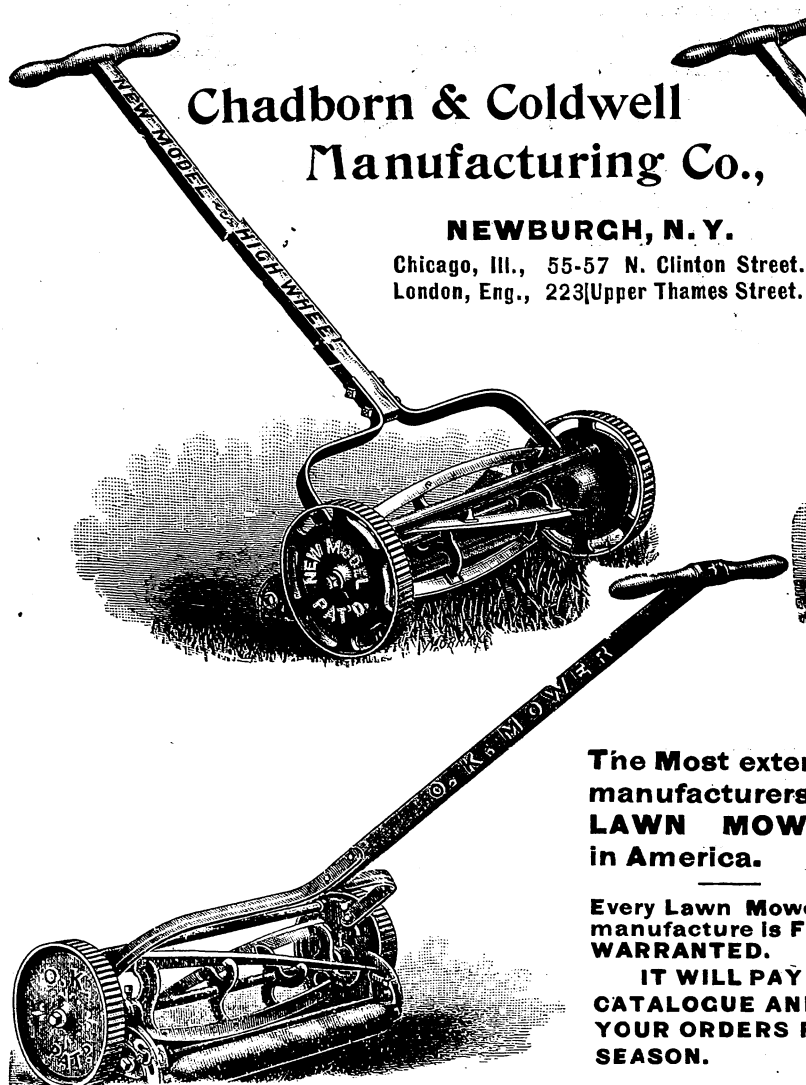
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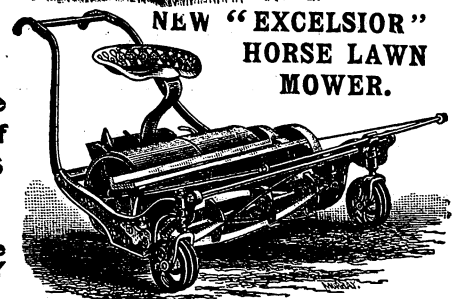
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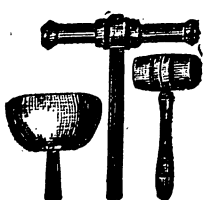
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Cactus No. 9.

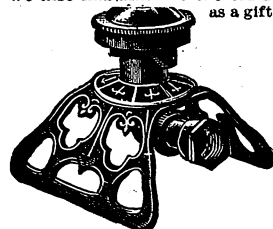
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The best Sprinklers for high pressures, and the only sprinklers which will give satisfaction with
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We also manufacture the old style revolving sprinklers, but for our own use would not have them
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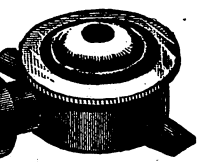


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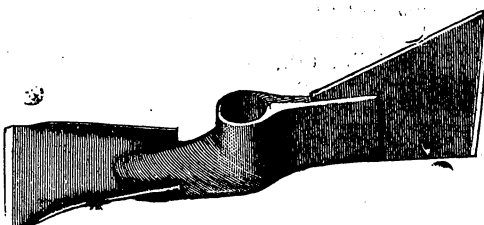
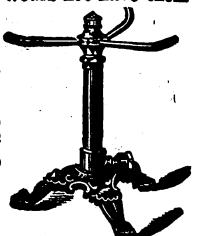
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Is designed as a tool for many purposes, such
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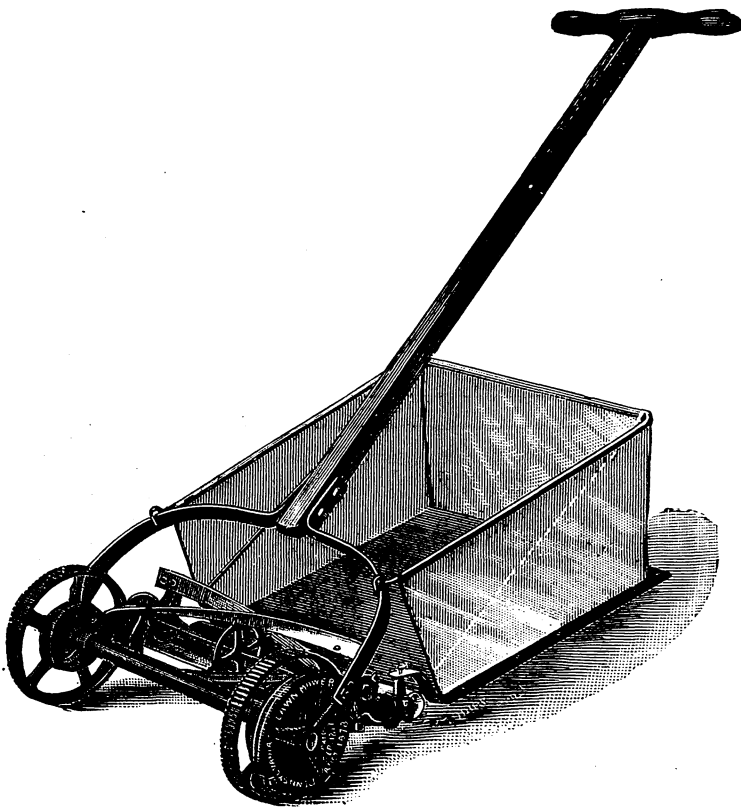
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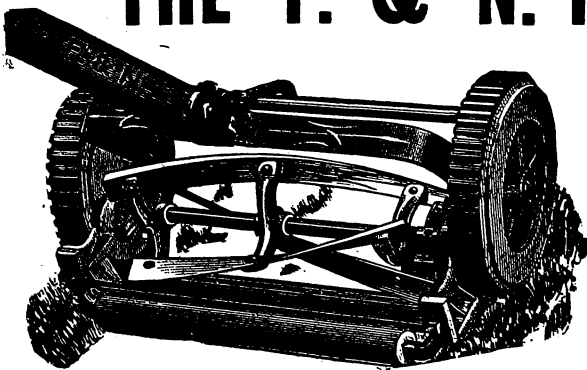
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 MANUFACTURERS OF
LAWN SPRINKLERS, TURF EDGERS, & C.
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 FOR HAND AND HORSE-POWER.

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Manufacturers of the best Wood and Iron Beam Steel, or Carbon, Right or Left Hand Plows in market. Also Standard Solid Steel Shovels, Coal Shovels, Coal and Grain Scoops and Spades, and the new patent Steel Snow Shovels. Furnace, Coal and Ash Scoops, Ice Choppers and Lawn Trimmers, Lawn Weedeers, Garden Trowels, &c., &c. Send for prices.



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The Cockburn Barrow and Machine Co.

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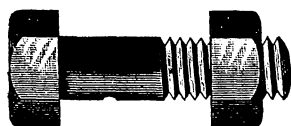
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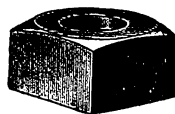
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FLAT
With hole in
TRUE CENTER.



Packed in kegs for general trade, or in 1 and 5 lb. boxes for hardware trade.

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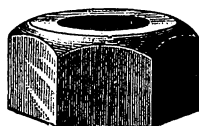
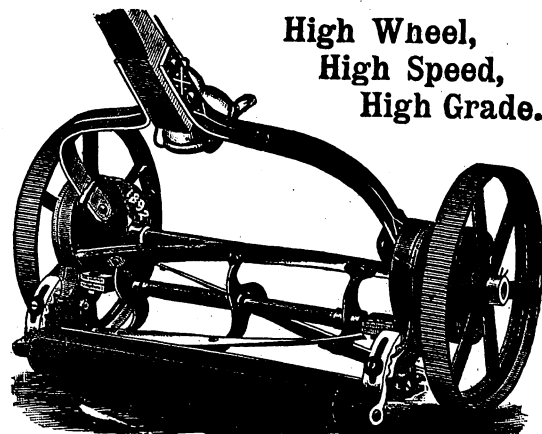
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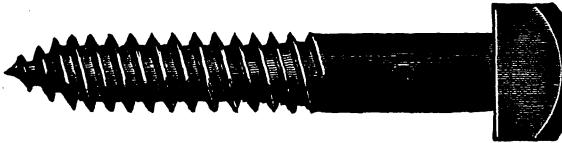
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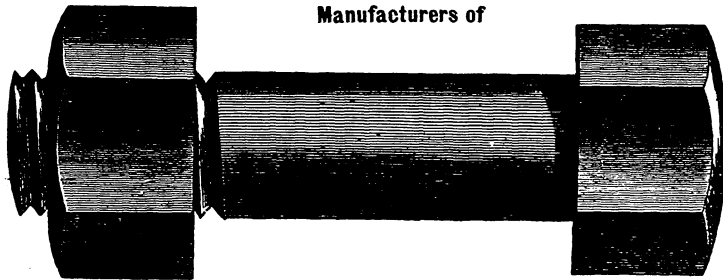
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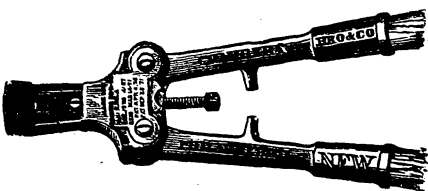
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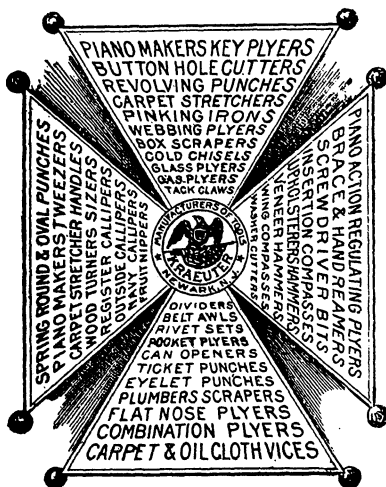
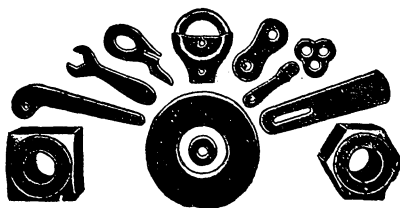
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Springfield Emery Wheel Mfg. Co., Bridgeport, Conn.
Waltham Emery Wheel Co., Waltham, Mass.
- Enamels.**
Nubian Iron Enamel Co., Cragin, Ill.

See Alphabetical Index, Page 110.

Engineers and Contractors.

Alken Henry, Pittsburgh, Pa.
Artificial Gas Engineering Co., Pitts-
burgh, Pa.
Brady Mfg. Co., Brooklyn, N. Y.
Carson, Henry J., Pittsburgh, Pa.
Christie W. Wallace, Paterson, N. J.
Herriek, J. A., 284 Pearl St., N. Y.
Kennedy, Julian, Pittsburgh, Pa.
Laughlin, Alex. & Co., Pittsburgh, Pa.
Leon, D. R., Co., Pittsburgh, Pa.
McClure, Amster & Co., Pittsburgh, Pa.
Pittsburgh Iron & Steel Engineer-
ing Co., Pittsburgh, Pa.
Roberts, Frank C., Philadelphia, Pa.
Smythe, S. R. Co., Incorporated Pitt-
sburgh, Pa.
Swindell W. & Bros., Pittsburgh, Pa.
Wilkie, Bothwell & Co., Ltd., Pitts-
burgh, Pa.
Witherow, Jas. P. Co., Pittsburgh, Pa.
Engineers, Gas.
Coca Gas Engine Works, Phila., Pa.
Rollason Gas Engine, Havemayer Bldg.,
N. Y.
Engines, Steam, Makers of.
Bass Foundry & Machine Works, Ft.
Wayne, Ind.
Buckeye Engine Co., Salem, O.
Cleveland & Hardwick, Erie, Pa.
Harrisburg Fdy. & Machine Works
Harrisburg, Pa.
Norwalk Iron Works Co., So. Norwalk,
Conn.
Phoenix Iron Wks. Co., Meadville, Pa.
Shipman Engine Co., Boston, Mass.
Southwick Foundry and Machine Co.,
Phila., Pa.
Tod, William & Co., Youngstown, O.
Wetherill, Robt. & Co., Chester, Pa.
Exhaust Tumblers
Sweester, W. A., Brooklyn, Mass.
Expansion Belts.
Boone, W. C. & Son, Brooklyn, N. Y.
Church, Isaac, Toledo, O.
Faucets, Self-Measuring
Lane Bros., Foughkeepsie, N. Y.
Faucets, Wooden, Makers of.
Boston & Lockport Block Co., Boston,
Mass., and Lockport, N. Y.
John Sommer's Son, Newark, N. J.
Feed-Water Heaters.
Davis, I. H. & Son, Hartford, Conn.
Goubert Mfg. Co., 32 Cortlandt St., N. Y.
Harrison Safety Boiler Wks. Phila., Pa.
National Pipe Bending Co., New
Haven, Conn.
Webster, Warren & Co., Phila., Pa.
Whitlock Coil Pipe Co., Elmwood,
Conn.
Fencing, Iron and Wire.
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Clinton Wire Cloth Co., Clinton, Mass.
DeKalb Fence Co., DeKalb, Ill.
Gilbert & Bennett Mfg. Co., 42 Cliff St.,
Hartman Mfg. Co., Beaver Falls, Pa.
Kilmer Mfg. Co., Newburgh, N. Y.
Mass, Foss & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleve-
land, O.
Reliance Wire Works Co., Milwaukee.
Files, Importers of.
Moss, F. W., 80 John, N. Y.
Files and Rasps, Manufacturers of.
Banker & White, Troy, N. Y.
Barnett, G. & H., 41 & 43 Richmond
Phila.
Butcher, W. & S., 135 Duane St., N. Y.
McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence R. I.
Fire Brick, Makers of.
Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md.
Kreischer R. & Son, 100 E. Hanston, St.
McLeod & Henry Co., Troy, N. Y.
Mauser, H. & Son, 420 E. 23d, N. Y.
Renovo Fire Brick and Clay Co., Phila.,
Ostrander Fire Brick Co., Troy, N. Y.
Presbury Stove Lining Co., Taunton,
Mass.
Valentine, M. D. & Bro., Woodbridge.
Fire Sets.
Troy Nickel Works, Troy, N. Y.
Fishing Tackle.
Dane, Stoddard & Kendall, Boston,
Mass.
Flint and Emery Paper.
Baeder, Adamson & Co., Phila., Pa.
Flue Cleaners.
Mackey, Jas. T. St. Louis, Mo.
Fly Fans.
Matthall, Ingram & Co., Baltimore, Md.
Fodder Cutters.
Silver Mfg. Co., Salem, O.
Forges, Portable, &c.
Bradley & Co., Syracuse, N. Y.
Bullock Belows Co., Cleveland, O.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lan-
caster, Pa.
Empire Portable Forge Co., Lansing-
burg, N. Y.
Foss Mfg. Co., Springfield, Ohio.
Sturtevant, B. F. Co., Boston, Mass.
Forgings, Iron and Steel.
Bethlehem Iron Co., Bethlehem, Pa.
Cambria Steel-Cambria Iron Co.,
Johnstown, Pa.
Scranton Forging Co., Scranton, Pa.
Foundry Facings.
Chicago Fdy. Supply Co., Chicago, Ill.
MacKellar Foundry Facing & Supply
Co., Quincy, Ill.
Faxon, J. W. & Co., Phila.
S. Obermayer Co., Cincinnati, O.
Smith, J. D. Fdy. Supply Co., Cin., O.
Whitehead Bros. Co., 517 W. 15th St.,
Cincinnati, O.
Foundry Riddles.
Estey, W. S., 65 Fulton, N. Y.
Foundry Supplies.
Chicago Fdy. Supply Co., Chicago, Ill.
Colliau, Victor, Detroit, Mich.
MacKellar Fdy. Facing & Supply Co.,
Quincy, Ill.
S. Obermayer Co., Cincinnati, O.
Faxon, J. W. & Co., Philadelphia.
Smith, J. D. Fdy. Supply Co., Cin., O.
Whitehead Bros. Co., 517 W. 15th St.,
Cincinnati, O.
Friction Clutches.
Keystone Clutch & Mch. Wks., Phila.,
Pa.
Moore & White Co., Philadelphia, Pa.

Fruit Presses.
Enterprise Mfg. Co., Philadelphia, Pa.
Fuel Burners.
Collins, W. S., 45 Drexel Bldg., N. Y.
Furnaces, Foundry.
Byram & Co., Detroit, Mich.
Garden Tools.
Noyes, B. B. & Co., Greenfield, Mass.
Jas Producers.
Wood, R. D. & Co., Philadelphia, Pa.
Jas & Steam Fitters' Supplies.
Pancoast & Mauls, Phila., Pa.
Gauge, Rolling Mill.
Haines Gauge Co., Philadelphia, Pa.
Gear Cutters.
T. E. Whiton Mach. Co., New London,
Conn.
Gears.
Boston Gear Works Boston Mass.
New Process Raw Hide Co., Syracuse,
N. Y.
Poole, Robt. & Son Co., Baltimore,
Md.
Union Fdy. & Mch. Co., Pittsburgh, Pa.
Glass Boards.
Canton Saw Co., Canton, O.
Glass Tubes.
Ashcroft Mfg. Co., 111 Liberty St., N. Y.
Glass Cutters.
Monce, S. G., Bristol, Conn.
Glue.
Baeder, Adamson & Co., Phila., Pa.
Russia Cement Co., Gloucester, Mass.
Grass Catchers.
Supplee Hardware Co., Phila., Pa.
Grinding Mills.
Foss Mfg. Co., Springfield, O.
**Grinding and Polishing Ma-
chines.**
Norton Emery Wheel Co., Worcester,
Mass.
Washburn Shops, Worcester, Mass.
Grindstone Dressing Machinery.
Blake & Johnson, Waterbury, Conn.
Grindstones.
Cleveland Stone Co., Cleveland, O.
Huron Grindstone Co., Port Austin,
Mich.
Gunpowder, Makers of.
Lafin & Rand Powder Co., N. Y.
Hand Carts.
Lansing Wheelbarrow Co., Lansing,
Mich.
Haier Chains.
Kelle & Colworth, Niagara Falls,
N. Y.
Handies.
New Process Raw Hide Co., Syracuse,
N. Y.
New York Mallet and Handle Wks.
456 E. Houston St., N. Y.
Hanger, Paper.
Chicago Spring Butt Co., Chicago, Ill.
Lane Bros., Foughkeepsie, N. Y.
Victor Mfg. Co., Newburyport, Mass.
Hardware Common Merchants.
Doseher, Martin, 88 Chambers, N. Y.
Graham, John H. & Co., 111 Chambers
St., N. Y.
Jacobus, W. H. & Co., 90 Chambers, N. Y.
Hardware Manufacturers.
Hotchkiss, E. S. Bridgeport, Conn.
Stearns, E. C. & Co., Syracuse, N. Y.
Union Mfg. Co., 103 Chambers, N. Y.
Yale & Towne Mfg. Co., Stamford,
Conn.
Hardware Mfrs. Agents.
Bingham, W. Co., Cleveland, O.
Graham, John H. & Co., 113 Chambers,
Hussey, E. J. & Co., 80 John St., N. Y.
McCoy, Jos. F. Co., 28 Warren St., N. Y.
Sickles, Sweet & Lyon, 35 Barclay, N. Y.
Underhill, Clinch & Co., 94 Chambers
St., N. Y.
Hardware Specialties.
Aome Shear Co., Bridgeport, Conn.
Belden Machine Co., New Haven, Conn.
Empire Portable Forge Co., Lansing-
burg, N. Y.
Enterprise Mfg. Co., Philadelphia, Pa.
Ette & Henger Mfg. Co., St. Louis, Mo.
Hart, H. C. Mfg. Co., Detroit, Mich.
Henn, A. S. & Co., New Haven, Conn.
Home Novelty Mfg. Co., St. Louis.
Knapp & Cowles Mfg. Co., Bridgeport,
Conn.
North Bros. Mfg. Co., Philadelphia, Pa.
Welland, Chas., 113 Chambers St., N. Y.
Wright, Fred, Worcester, Mass.
Wire Goods Co., Worcester, Mass.
Underhill, Clinch & Co., 94 Chambers
Street, N. Y.
Hardware, Yacht and Ship.
Ferdinand, L. W. & Co., Boston, Mass.
Harness Snaps.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N. Y.
Fitch, W. & E. T., New Haven, Conn.
Hay Knives.
Holt, Hiram, Co., E. Wilton, Me.
Hoisting Machines.
Box, Alfred & Co., 314 Green, Phila.
Brown, Hoisting & Conveying Mch. Co.,
Cleveland, Ohio.
Fulton Iron & Engine Wks., Detroit,
Mich.
Harrington, E. Son & Co., Phila.
Lane Bros., Foughkeepsie, N. Y.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.
Maris & Beckley, Philadelphia.
Moore Mfg. & Fdy. Co., Milwaukee, Wis.
Hollow-Ware.
Bronson Supply Co., Cleveland, Ohio.
Morse, Williams & Co., Phila.
Sellers, Wm. & Co., Phila. and N. Y.
Speldel, J. G., Reading, Pa.
Yale & Towne Mfg. Co., Stamford, Ct.
Clough Stamp & Tool Co., Cleve-
land, O.
Stuart & Peterson Co., Phila., Pa.
Hollowware, Aluminum.
Illinois Pure Aluminum Co., Lemont, Ill.
Horse and Barbers' Clippers.
Hotchkiss, E. S., Bridgeport, Conn.
Horse Nails, Makers of.
National Horse Nail Co., Vergennes, Vt.
Horse Shoes, Makers of.
Bryden Horse Shoe Co., Catsanqua,
Pa.
Burden Iron Co., Troy, N. Y.
Diamond State Iron Co., Wilmington,
Pa.
Old Dominion Iron & Nail Works Co.,
Richmond, Va.

Phoenix Horse Shoe Co., Foughkeepsie
N. Y.
Rhode Island Perkins Horse Shoe Co.,
Providence.
Standard Horse Shoe Co., Boston,
Mass.
The Burden Iron Co., Troy, N. Y.
Bees.
Cleveland Rubber Co., Cleveland, O.
N. Y. Beating & Packing Co., Ltd., 15
Park Row, N. Y.
Hose Menders.
Hudson, C. E. & Co., Leominster,
Mass.
Hotels.
The Audubon, Chicago, Ill.
Hydrants, &c.
McLean, John, 296 & 298 Monroe, N. Y.
Hydraulic Jacks.
Dudgdon, Richard, 24 Columbia, N. Y.
Watson & Stillman, 204 E. 43d, N. Y.
Ice-Cream Freezers.
North Bros. Mfg. Co., Phila., Pa.
Packer, C. W., Philadelphia, Pa.
Shepard Hdw. Co., Buffalo, N. Y.
White Mountain Freezer Co., Nashua,
N. H.
Ice Shavers.
Enterprise Mfg. Co., Philadelphia, Pa.
Injectors.
Jenkins Bros., New York
Insurance, Boiler.
Hartford Steam Boiler Inspection &
Insurance Co., Hartford, Conn.
Iron and Steel, Swedish.
Lundberg, Gustaf, Boston, Mass.
Milne, A. & Co., 1 Broadway, N. Y.
Iron Commission Brokers.
Corning, Edw. & Co., 29 B'way, N. Y.
Cotton, Bradley & Co., Philadelphia.
Ething, Edw. J., Philadelphia.
Hogan, John L. & Co., Philadelphia, Pa.
Hoffman, J. W. & Co., Philadelphia.
Levis, Henry & Co., Philadelphia.
Kealey, Jerome & Co., Philadelphia.
Lea, J. Tatnall & Co., Philadelphia.
Mohr, J. J., 430 Walnut, Philadelphia.
Mann, E. B. & Co., Philadelphia.
Pilling & Crane, Philadelphia, Pa.
Sibell, Geo. H. & Co., Chicago, Ill.
Wister, L. & R. & Co., Phila., Pa.
Iron Ore.
Naylor & Co., 45 Wall, N. Y.
Pickands, Brown & Co., Chicago, Ill.
Pullman, J. Wesley, Phila., Pa.
Samuel, Frank, Philadelphia, Pa.
Iron, Merchants.
Barnes, C. K. & Co., Philadelphia, Pa.
Borden & Lovell, 70 West, N. Y.
Bussell & Cuniffe, Philadelphia.
Corning, Edw. & Co., 29 B'way, N. Y.
Cox, Justice, Jr., Philadelphia.
Cotton, Bradley & Co., Philadelphia.
Hoffman, J. W. & Co., Philadelphia.
Leonard, J., 446 West St., N. Y.
Navior & Co., 45 Wall St., N. Y.
Niles, Wheel & Co., Philadelphia.
Ogden, Wallace, 85 Elm, N. Y.
Pickands, Brown & Co., Chicago, Ill.
Pierson & Co., 24-27 West, N. Y.
Richards, D. W. & Co., 88 Main St., N. Y.
Wallace, Wm. H. & Co., Albany &
Washington streets, N. Y.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.
Iron, Importers.
Albert, Jere & Co., N. Y. and Boston.
Lundberg, Gustaf, Boston, Mass.
Iron, Sheet, Manufacturers of.
Edw. Iron & Steel Co., Bridgeport, O.
Cambridge Iron & Steel Co., Cambridge,
Ohio.
W. Dewees Wood Co., Lim., McKees-
port, Pa.
Ironwork, Ornamental.
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Ludlow-Saylor Wire Co., St. Louis, Mo.
Mast, Foss & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleve-
land, O.
Keys.
Wollensak, J. F., Chicago, Ill.
Ladders.
Daves, Chas. & Co., Williamsport, Pa.
Ladies.
Detroit Fdy. Equipment Co., Detroit,
Mich.
Lamp Stoves.
Glazier Stove Co., Chelsea, Mich.
Lamps.
Standard Lighting Co., Cleveland, O.
Lanterns.
Detroit, E. & Co., 60 Light St., N. Y.
Steam Gauge & Lantern Co., Syracuse,
N. Y.
Lathe.
Bradford Mill Co., Cincinnati, Ohio.
Draper Machine Tool Co., Worcester,
Mass.
Johnson, Israel H., Jr., & Co., Phila-
delphia, Pa.
Sebastian Lathe Co., Cincinnati, O.
Sebastian, May & Co., Sidney, O.
Seneca Falls Mfg. Co., Seneca Falls,
N. Y.
Lathing, Wire.
Clinton Wire Cloth Co., Clinton, Mass.
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Wor-
cester, Mass.
Lawn Mattocks.
Railway Speed Recorder Co., Kent, O.
Lawn Mowers.
Blackman, W. Co., Cleveland, O.
Lair, W. E., Syracuse, N. Y.
Chadborn & Coldwell Mfg. Co., New-
burg, N. Y.
Coldwell Lawn Mower Co., Newburg,
N. Y.
F. & N. Mfg. Co., Richmond, Ind.
Henley, M. C., Richmond, Ind.
Lair, W. E., Syracuse, N. Y.
Mast, Foss & Co., Springfield, O.
Stearns, E. C. & Co., Syracuse, N. Y.
Supplee Hdw. Co., Phila., Pa.
Lawn Rakes.
Gibbs Mfg. Co., Canton, O.
Schaeffer & Co., Dayton, Ohio.
Syracuse Specialty Mfg. Co., Syracuse,
N. Y.

Lawn Sprinklers.
Blair Mfg. Co., Springfield, Mass.
Ette & Henger Mfg. Co., St. Louis.
McGowan, John H. Co., Cincinnati, O.
Lawn Sweepers.
Lape, W. E., Syracuse, N. Y.
Lawn Swings.
Davies, Chas. & Co., Williamsport, Pa.
Lemon Squeezers.
Ripley Mfg. Co., Unionville, Conn.
Letters, Paper.
Tablet & Ticket Co., Chicago, Ill.
Levels.
Davis & Cook, Watertown, N. Y.
Richardson, C. F., & Son Athol, Mass.
Locks & Knobs, Manufacturers of.
Deits, A. E., 97 Chambers, N. Y.
Keyless Lock Co., Chicago, Ill.
Reading Hdw. Co., Reading, Pa.
Sargent & Co., 37 Chambers St., N. Y.
Smith & Eggs, M., Bridgeport, Conn.
Yale & Towne Mfg. Co., Stamford.
Lubricators.
Wadham Oil & Grease Co., Milwaukee,
Wis.
Machinery.
Am. Tool Works, Cleveland, Ohio.
Barnes, W. F. & John, Rockford, Ill.
Becker, Jno. Mfg. Co., Fitchburg, Mass.
Bement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 46 Dey, N. Y.
Bignall & Keeler Mfg. Co., St. Louis.
Birmingham Iron Foundry, Birming-
ham, Conn.
Bliss, E. W. Co., Brooklyn, N. Y.
Bogert, Jno. L., Flushing, N. Y.
Bradford Mill Co., Cincinnati, Ohio.
Briggs, Marvin, 12 Broadway, N. Y.
Brown & Sharpe Mfg. Co., Providence,
R. I.
Carlin's Sons, Thos., Allegheny, Pa.
Cinn. Milling Mch. Co., Cincinnati,
Ohio.
Clapp, Geo. M., agt., 74 Cortlandt, N. Y.
Coulter & McKenize Mch. Co., Bridge-
port, Conn.
Cruikshank, D. B., Providence, R. I.
Davis, W. P., Rochester, N. Y.
Detrick & Harvey Mch. Co., Balti-
more, Md.
Fitchburg Mch. Works, Fitchburg,
Mass.
Garvis Mch. Co., Laight & Canal Sts.
Gould & Eberhardt, Newark, N. J.
Harrington, E. Son & Co., Phila., Pa.
Hendey Machine Co., Torrington, Ct.
Hill, Clarke & Co., Boston, Mass.
Ingersoll Milling Machine Co., Rock-
ford, Ill.
Johnson, Israel H., Jr., & Co., Phila.
Jones & Lamson Mch. Co., Springfield,
Mass.
Lodge & Davis Mch. Tool Co., Cin-
cinnati, O.
Lodge & Shipley Mch. Tool Works,
Cincinnati, O.
Lovegrove & Co., Philadelphia, Pa.
McCabe, J. J., 101 Cortlandt, N. Y.
Mechanists' Supply Co., Rochester, N. Y.
Manville, E. J. Mch. Co., Waterbury,
Conn.
Newark Mch. Tool Works, Newark, N. J.
New Haven Mfg. Co., New Haven, Conn.
New York Mach'ry Depot, N. Y.
Niles Tool Wks., 138 Liberty St., N. Y.
Pedrick & Ayer, Phila., Pa.
Pittsburgh Mfg. Co., Pittsburgh, Pa.
Place, Geo., 120 Broadway, N. Y.
Poole, Robt. & Son Co., Baltimore, Md.
Powell Planer Co., Worcester, Mass.
Pratt & Whitney Co., Hartford, Conn.
Prentiss Tool & Supply Co., N. Y.
Scranton Supply & Mch. Co., Scrant-
on, Pa.
Sellers, Wm. & Co., Phila.
Seyfert's Sons, L. F., Philadelphia, Pa.
Steptoe, J. & Co., Cincinnati, O.
Stow Flexible Shaft Co., Ltd., Phila.
Toomey, Frank, Philadelphia, Pa.
Wetherill, Robert & Co., Chester, Pa.
Wilson, W. A., Rochester, N. Y.
Woodruff Mfg. Co., Hartford, Conn.
**Machinery for Hardware Manu-
facture.**
Adt, Jno. & Son, New Haven, Conn.
Machine Knives.
Loring Coes & Co., Worcester, Mass.
Lloyd, John, 558-562 Water St., N. Y.
Machine Tools.—See Machinery.
Machine Work.
Angus, C. H., Albany, N. Y.
Machinists' Scales.
Coffin & Leighton, Syracuse, N. Y.
Starrett, L. S., Athol, Mass.
Machinists' Tools and Supplies.
Brown & Sharpe Mfg. Co., Providence,
King, J. M. & Co., Waterford, N. Y.
Sellers, Wm. & Co., Inc., Phila.
Mallets.
N. Y. Mallet & Handle Works, N. Y.
Manufacturing Sites.
Illinois Central R. Co., Chicago, Ill.
Kokomo Enterprise Co., Kokomo, Ind.
Measuring Tapes.
Lufkin Rule Co., Saginaw, Mich.
Meat Cutters.
Enterprise Mfg. Co., Philadelphia, Pa.
Mechanical Drawing.
Correspondence School of Mechanics
Scranton, Pa.
Metals.
Fearing, Wm. S., 100 Chambers, N. Y.
Hendricks Bros., 49 Cliff, N. Y.
Naylor & Co., 45 Wall, N. Y.
Metal Brokers.
American Metal Co., N. Y.
Metalburgists.
Britton, J. Hodgett, Phila.
Metal Saws.
Ehrhardt, Gustave & Sons, Pittsburg
& C. Co., Chicago, Ill.
Milling Machines.
Brown & Sharpe, Providence, R. I.
Cin. Milling Mch. Co., Cincinnati,
Ohio.
Ingersoll Milling Machine Co., Rock-
ford, Ill.
Pedrick & Ayer, Phila., Pa.
Mining Knives.
Palmer Hdw. Mfg. Co., Troy, N. Y.
Mine Lamps.
Darby, Edw. & Sons, Phila., Pa.
Leonard, B. E., Scranton, Pa.
Leonard, T. F., Scranton, Pa.

- Jones, E. M. & Co.,** Boston, Mass.
Kayser, E. H. & Co., Sheffield, Eng.
La Belle Steel Co., Pittsburgh, Pa.
Lukens Iron & Steel Co., Coatesville, Pa.
McKee, McLean & Co., Pittsburg, Pa.
Moss, F. W., 88 John N. Y.
Naylor & Co., 45 Wall, N. Y.
Pennsylvania Steel Co., Steelton, Pa.
Peterson & Co., 24-27 West, N. Y.
Pottsville Iron and Steel Co., Pottsville, Pa.
Rally, J. W., Fort Hunter P. O., Pa.
Rowland, Wm. & Harvey, Frankford, Philadelphia.
Singer, Nimick & Co., Pittsburgh.
Stanley Works, New Britain, Conn.
Steel & Iron Improvement Co., Pittsburgh, Pa.
Taylor Iron & Steel Co., High Bridge, N. J.
Wordlaw, S. & O., Sheffield, Eng.
Wetherell Bros., 98 Liberty, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
- Steel Manufacturers' Agents.**
Barnes, C. E. & Co., Philadelphia, Pa.
Borning, Edw. & Co., 29 Eway, N. Y.
Lindsay, Jas. G. & Co., Phila., Pa.
- Steel Rails, Manufacturers of.**
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Iron Co., Johnstown, Pa.
Illinois Steel Co., Chicago, Ill.
Penna. Steel Co., Steelton, Pa.
Montour Iron & Steel Co., Danville, Pa.
Riverside Iron Wks., Wheeling, W. Va.
- Steel Spiral Springs, Manufacturers.**
Chadillon John & Sons N. Y.
Roland, Wm. & Harvey, Frankford.
Wolff, R. & Co., Ltd., 118 Street and Harlem River, N. Y.
- Steel, Tools.**
Frankford Steel Co., Philadelphia, Pa.
Jessop, Wm. & Sons, Sheffield, England, 91 John, N. Y.
La Belle Steel Co., Pittsburgh, Pa.
- Step Ladders.**
Bicycle Step Ladder Co., Chicago, Ill.
Croissant, M., Albany, N. Y.
- Stocks and Dies.**
Armstrong Mfg. Co., Bridgeport, Conn.
Billings & Spencer Co., Hartford, Conn.
Butterfield & Co., Derby Line, Vt.
Hart Mfg. Co., Cleveland, O.
Saunders & Sons, D., Yonkers, N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Stove Linings.**
Ostrander Fire Brick Co., Troy, N. Y.
- Stove Pipe Thimbles.**
Cheney, S. & Son, Manlius, N. Y.
- Stove Trimmings.**
Troy Nickel Works, Troy, N. Y.
- Street Lamps.**
Dietz, R. E. Co., 60 Light St., N. Y.
Steam Gauge & Lantern Co., Syracuse, N. Y.
- Strops.**
Electric Outlery Co., 113 Chambers, N. Y.
J. R. Torrey & Co., Worcester, Mass.
- Strapping Machines.**
Schmitz, E. Lothar, 92 Reade St., N. Y.
- Structural Iron Work.**
Berlin Iron Bridge Co., East Berlin, Conn.
Boston Bridge Wks., Boston, Mass.
Lindsay, Jas. G. & Co., Phila., Pa.
Wrought Iron Bridge Co., Canton, O.
- Sulphuric Acid.**
Matthiessen & Hegeler Zinc Co., La Salle, Ill.
- Tacks, Brads, Staples, &c.**
Atlas Tack Corporation, Boston, Mass.
A. Field & Co., Taunton, Mass.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
Nat. Screw & Tack Co., Cleveland, O.
Phillips, E. & Sons, South Hanover.
Plymouth Mills, Plymouth, Mass.
Trufant, W. E., Whitman, Mass.
- Taps and Dies.**
Butterfield & Co., Derby Line, Vt.
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
- Manning, Maxwell & Moore,** 111 Liberty St., N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Testing Laboratories.**
Riehle Bros. Testing Mch. Co., Philadelphia.
- Testing Machines.**
Riehle Bros. Testing Mch. Co., Phila.
- Theatrical Hardware.**
Wollensak, J. F., Chicago, Ill.
- Chill Springs.**
Frost Thill Spring Co., Boston, Mass.
Sabin Machine Co., Montpelier, Vt.
- Time Record.**
Scattergood, H. W., Phila., Pa.
- Tinners' Hardware.**
Berger Bros., Philadelphia, Pa.
- Tin Plate Machinery.**
Lloyd Booth Co., Youngtown, Ohio.
- Tinware.**
Am. Stamping Co., 104 & 108 John St.,
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- Tire Upsetters.**
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Britton, Horace E., Stoughton, Mass.
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Chauviret Tool Co., Reading, Pa.
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Kraemer & Co., Newark, N. J.
Mayhew, H. H. Co., Shelburne Falls, Mass.
Millers Falls Co., 98 Reade, N. Y.
Richardson, C. F. & Son, Athol, Mass.
Standard Tool Co., Athol, Mass.
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- Tools, Blacksmith and Wheel.**
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Morse Twist Drill & Machine Co., New Bedford, Mass.
- New Process Twist Drill Co.,** Taunton, Mass.
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New Haven Wire Mfg. Co., New Haven, Conn.
Salem Wire Nail Co., Salem, O.
Trenton Iron Co., Trenton, N. J.
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Wetherell Bros., 98 Liberty St., N. Y.
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- Wire Cloth.**
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W. S. Tyler Wire Works Co., Cleve'd.
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Higginum Hdw. Co., Higginum, Conn.
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- Wire Dies.**
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Newton & Shipman, 83 John, N. Y.
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The Wire Goods Co., Worcester, Mass.
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Washburn & Moen Mfg. Co., Worcester, Mass.
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Sebastian Lathe Co., Cincinnati, Ohio.
Sebastian, May & Co., Sidney, O.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.
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THE IRON AGE.

The oldest paper in the world devoted to the interests of the Hardware, Iron and Metal Trades, and a standard authority on all matters relating to those branches of industry.

RATES OF SUBSCRIPTION:

INCLUDING POSTAGE.

UNITED STATES AND BRITISH AMERICA.

Weekly Edition, Issued every THURSDAY MORNING,	\$4.50 a year.
Semi-Monthly Edition, First and THIRD THURSDAYS of every month,	2.30 "
Monthly Edition First THURSDAY of every month,	1.15 "

RATES OF ADVERTISING:

ONE SQUARE (12 LINES, ONE INCH).

ONE INSERTION	\$2.00	SIX MONTHS,	\$30.00
ONE MONTH,	7.50	ONE YEAR,	50.00
THREE MONTHS,	17.50	Rates for larger spaces quoted on application.	
New York (Main Office),	96-102 Reade Street,	DAVID WILLIAMS, Publisher,	
Philadelphia,	220 South Fourth Street,	THOMAS HOBSON, Manager.	
Pittsburgh,	Room 509, Hamilton Building.	ROBERT A. WALKER, Manager.	
Chicago,	59 Dearborn Street, cor. Randolph,	{ J. K. HANES, Business Manager.	
Cincinnati,	Rooms 22-24 Pickering Building,	{ GEO. W. COPE, Resident Asso. Ed.	
St. Louis,	Bank of Commerce Building,	HENRY SMITH, Manager.	
Boston,	146 Franklin Street,	H. H. ROBERTS, Manager.	
Cleveland,	312 The Cuyahoga,	WALTER C. ENGLISH, Manager.	
		EZRA S. ADAMS, Manager.	

BRITISH AGENCY: Office of *The Ironmonger*, 42 Cannon St., London.

Remittances should be made by draft, payable to the order of DAVID WILLIAMS, on any banking house in the United States or Europe, or by P. O. Money Order on New York. When these cannot be obtained, postage stamps of any country will be received. Newsdealers or Booksellers in any part of the world may obtain *The Iron Age* through The American News Company, New York, U. S. A. The International News Company, New York, U. S. A. and London, England; or The San Francisco News Company, San Francisco, Cal., U. S. A.

Entered at the Post Office, New York, as Second-Class Matter.

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Co.....	60	Rogers Gas Engines.....	63	Rome Brass & Cop. Mills.....	103	Ross, H. & Co.....	112	Rosland, Wm. & Harvey.....	69	Russell, Burdall & Wardell.....	71	Russia Cement Co.....	61	St. Joseph Pump Co.....	2	St. Louis Bronze & Alu. Sabin Machine Co.....	53	Salem Fdy. & Mch. Shop.....	17	Salem Wire Nail Co.....	28	Samson Cordage Works.....	17	Samuel, Frank.....	26	Sargent Co., D.....	63	Scattergood, H. W.....	101	Scheffer & Co.....	6	Scheeler & Son.....	76	Schmitz, E. Lother.....	43	Schoverling, Daly & Gales.....	43	Schneider & Tunkamp Co.....	3	Scott, Geo. M.....	96	Seaville Mfg. Co.....	96	Seranton Forging Co.....	23	Seranton Supply & Mch. Co.....	59	Sebastian, May & Co.....	53	Sellers, Wm. & Co.....	58	Seneca Falls Mfg. Co.....	26	Sessions Foundry Co.....	59	Seybert, L.....	112	Sheldahl, Geo. H. & Co.....	41	Sibley & Ware.....	104	Sickles, Sweet & Lyon.....	101	Sidney Steel Scraper Co.....	46	Sigourney Tool Co.....	6	Slater, Geo. H. & Co.....	39	Simmons Mfg. Co.....	23	Singer, Nimick & Co.....	28	Skelly, J. W. & Son.....	49	Skinner Chuck Co.....	50	Smith & Egge Mfg. Co.....	97	Smith, H. D. & Co.....	62	Smith Friction Drill and Tool Co.....	54	Smith, Oliver A.....	100	Smythe, S. R. Co., Inc.....	51	Sommer's Son, John.....	36	Southark Fdy. & Mch. Co.....	27	Spaulding, J. G.....	27	Spears, J. C. & Co.....	27	Spencer's S. Sons.....	38	Springfield Brass Co.....	55	Springfield Emery Wheel Co.....	27	Standard Fdy. & Mch. Co.....	27	Standard Lighting Co.....	59	Standard Steel Casting Co.....	51	Standard Tool Co.....	69	Stanley Rule & Level Co.....	111	Stanley Works.....	67	Stark Mch. & Tool Co.....	44	Starrett, L. S.....	71	Steam Gauge Lantern Co.....	68	Stearns, E. C. & Co.....	66	Stebbins, Charles J.....	16	Steel & Iron Imp. Co.....	61	Steeple, J. & Co.....	60	Sternbergh, J. H. & Son.....	105	Stevens Arms & Tool Co.....	93	Stewart & Baker.....	87	Stiles & Parker Press Co.....	41	Stocking, E. B.....	25	Storm Mfg. Co.....	74	Stover Novelty Works.....	94	Stover Mfg. Co.....	94	Stow Flexible Shaft Co.....	51	Stuart & Peterson Co.....	89	Sturtevant, B. F. Co.....	45	Supple Hardware Co.....	103	Sweet Mfg. Co.....	101	Sweetser, W. A.....	27	Swindell, W. & Bros.....	31	Syracuse Specialty Mfg. Co.....	101	Syracuse Steel Fdry. Co.....	25	Taintor Mfg. Co.....	74	Tablet & Ticket Co.....	50	Talbot, W. Co.....	60	Taylor Iron & Steel Co.....	24	Thompson Electric Welding Co.....	24	Thomson-Houston Motor Co.....	52	Tiebout, W. & J.....	93	Titchener, E. H. & Co.....	11	Townsend, W. & Co.....	105	Travers Bros. Co.....	4	Trenton Iron Co.....	58	Trenton Malleable Iron Co.....	28	Threshewey Mfg. Co.....	66	Trimont Mfg. Co.....	98	Troy Nickel Works.....	77	Tucker & Dorsey Mfg. Co.....	60	Tyler, J. & Co., Jr. & Son.....	26	Underhill, Clinch Co.....	38	Union Fdry & Mch. Co.....	38	Union Mfg. Co.....	49	Union Metallic Cartridge Co.....	1	Union Tool Check Co.....	93	Union Valley Bros. Co.....	93	Valentine, M. 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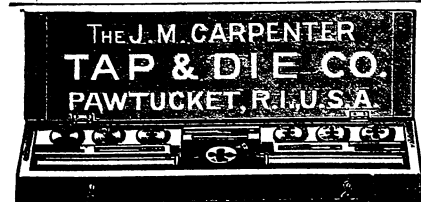
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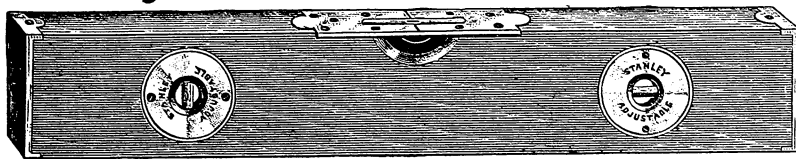
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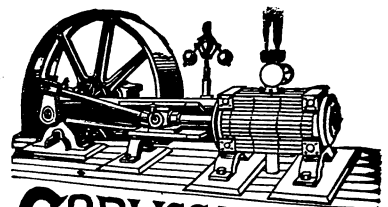


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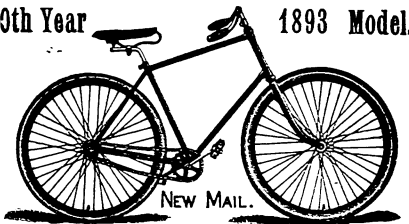
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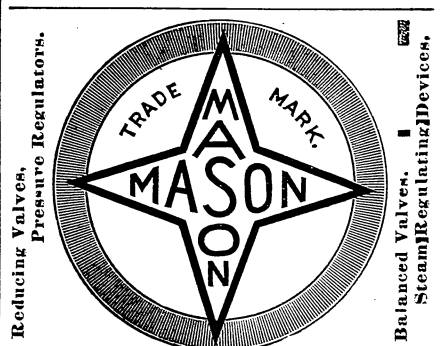
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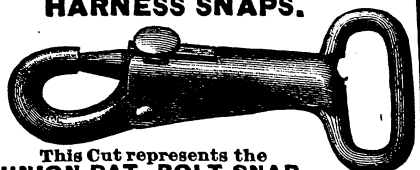
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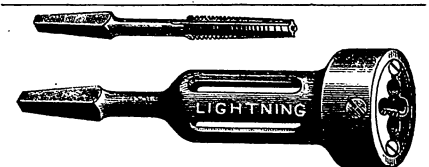
See Page 68.

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THE IRON AGE

THURSDAY, MAY 11, 1893.

The Morse-Williams Electric Elevator.

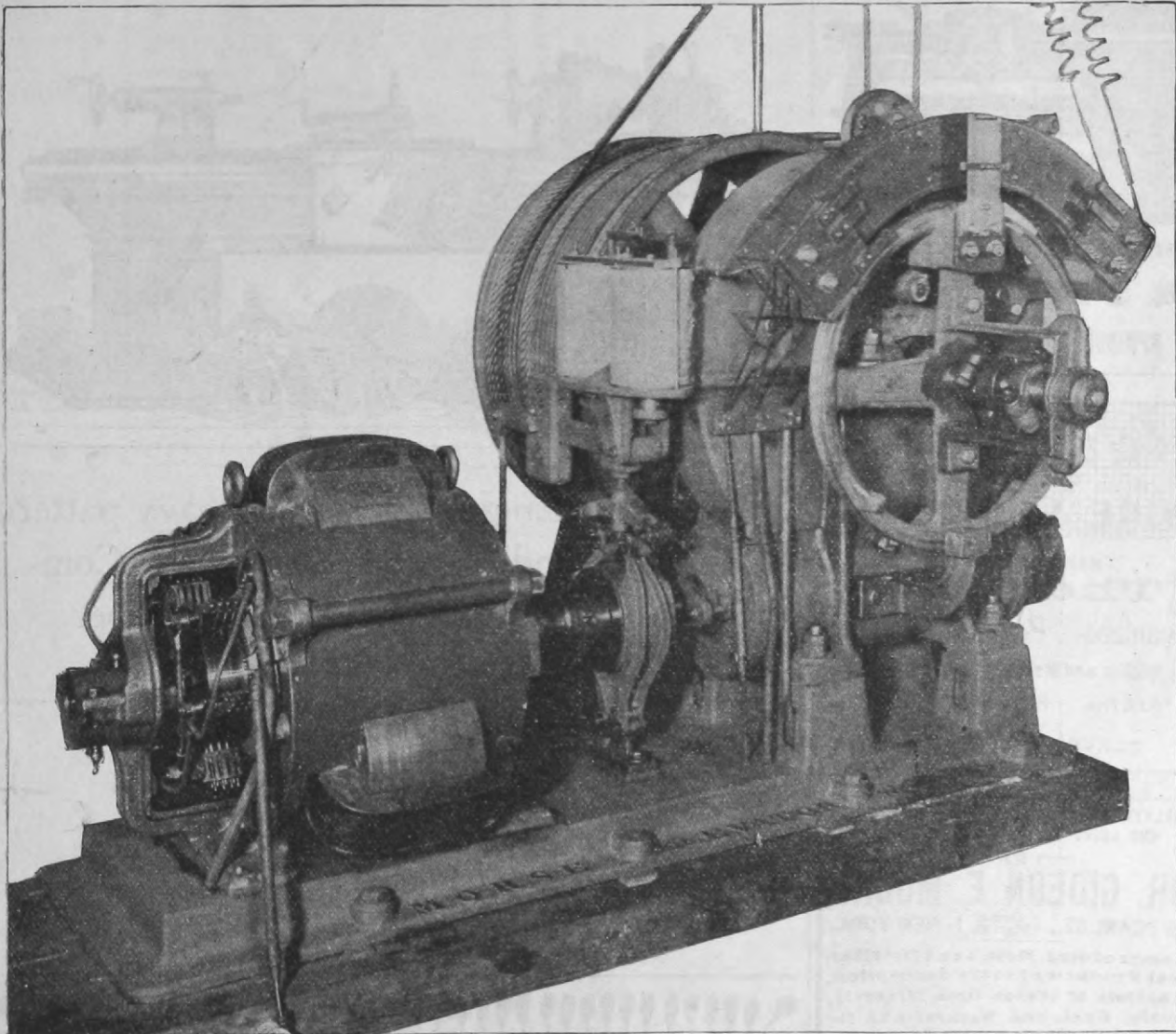
The constantly increasing demand for passenger elevators operated by electric motors has stimulated inventors to produce something which should at once be compact, durable and not liable to get out of order. We illustrate with this article the latest type of machine, in which the motor is connected directly to the worm shaft of a winding apparatus, which is now being placed on the market by Morse, Williams & Co. of Philadelphia, Pa.

weight. The special advantage of this arrangement is shown in case the electric current from any cause should be cut off, when the brake would be instantly applied, thus stopping the machine. The brake is so constructed as to act as a governor in checking the descent of the car, should it be accelerated beyond the normal speed at which the motor is designed to run it.

The drum upon which the cables wind is grooved in the lathe and keyed fast to the heavy shaft, to which the worm wheel is also keyed. This shaft is provided with

elevator to start easily and gently with and without a load.

The whole apparatus is placed upon a heavy cast-iron bed plate and the motor is thoroughly insulated therefrom when a high tension current is used to obviate danger of shock in the car. The efficiency of the machines has been tested under varying conditions, and the makers claim that the average amount of current consumed both in raising the load and lowering the empty car has been found to be low. These machines are designed to



MORSE, WILLIAMS & CO.'S ELECTRIC ELEVATOR.

The machine has been designed especially with a view of obtaining simplicity of construction, accessibility of parts for repair and smoothness in running—the latter exceedingly important feature being attained by the use of the Hindley worm gearing, the manufacture of which has been made a specialty for years. The machine consists of a worm of bronze or steel and a wheel incased in an oil-tight housing; the thrust of the worm shaft is taken on hard-metal buttons revolving in oil.

The motor is attached to the worm shaft by means of a coupling. The worm shaft is provided with a powerful double-shoe brake, which is released by the action of an electro magnet and is applied by a

stop collars and nuts arranged to stop the car at terminal landings independent of the operator.

The slack cable stop arrangement is also a feature of this machine; it stops the machine automatically in case the car should become obstructed in its descent and stop. Without such an attachment there would be an unwinding and consequent entanglement of the cables with the machinery.

The motor is of the low speed, multipolar type; the bearings are self oiling; carbon brushes are used, requiring a minimum of attention. The reversing switches and controlling apparatus are of simple and improved forms, their action causing the

raise average loads at speeds as high as 250 feet per minute.

The Poughkeepsie Bridge, which was to secure the New England coal traffic and complete Reading's triumph turns out to be the principal obstacle to success in securing a reorganization of the dismembered fragments of the general wreck.

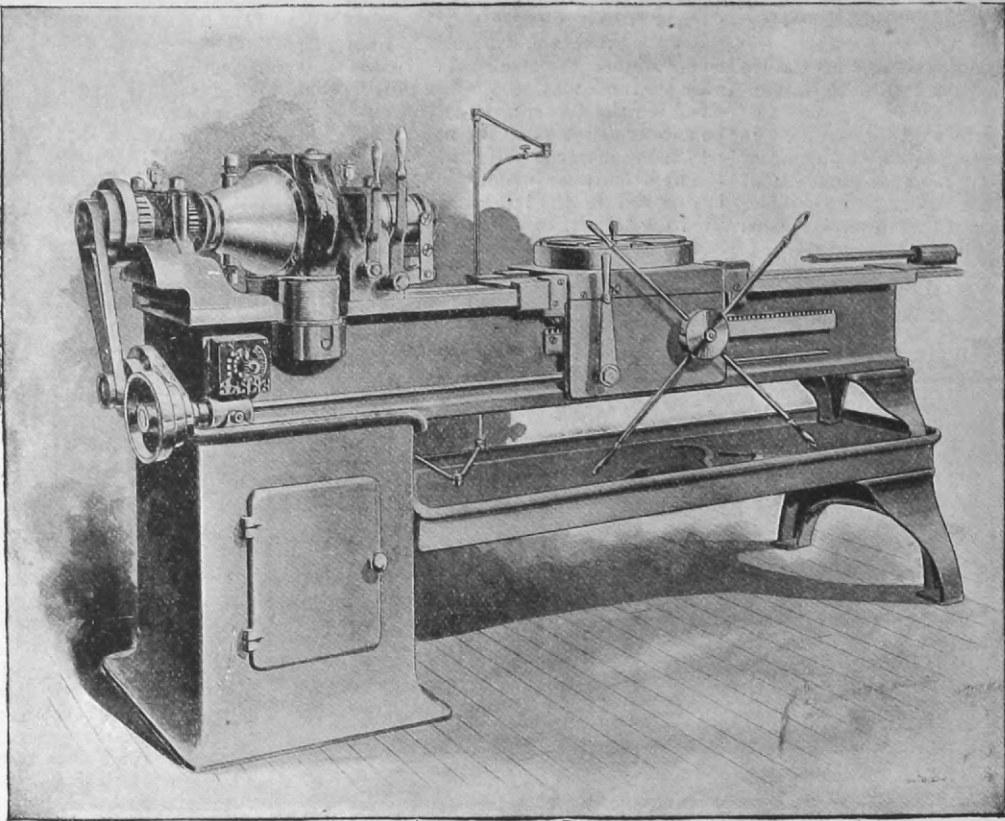
Judge Torrey of St. Louis, author of the Torrey Bankruptcy bill, is hopeful of the success of that measure in the next Congress.

Electric Machine Tools.

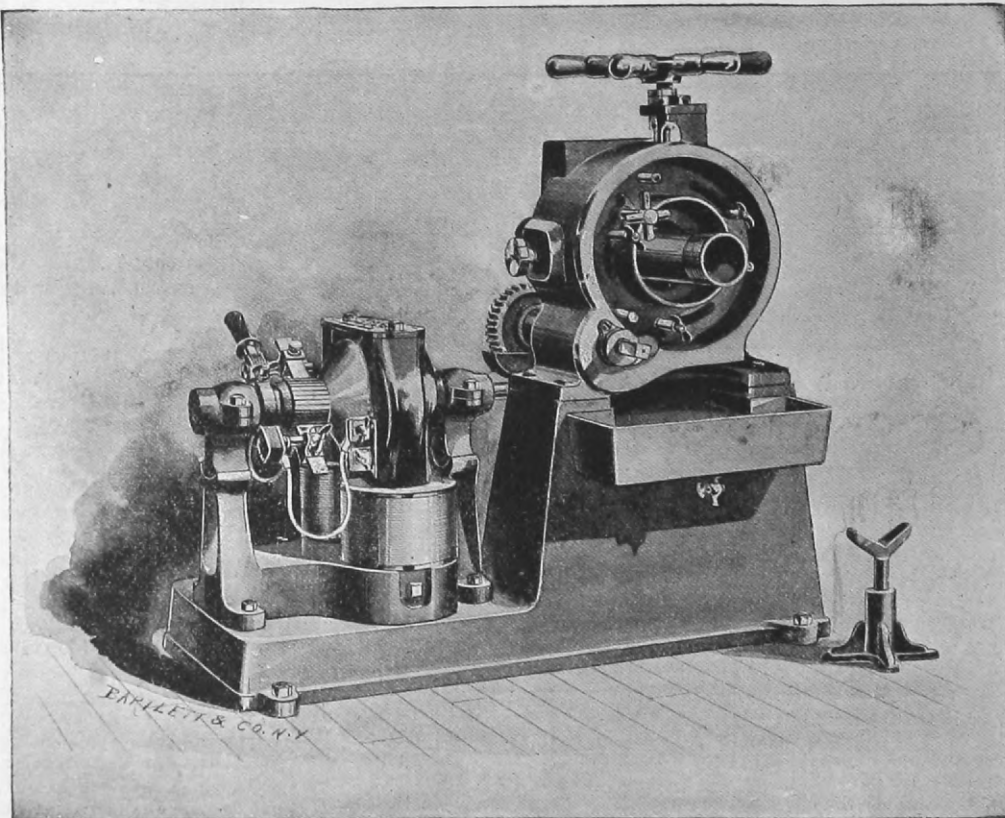
At the new works of the Crocker-Wheeler Electric Company at Ampere, East Orange, N. J., all the power is sup-

plied by electric motors. The peculiar feature of the equipment is that, with the exception of a few short lines of shafting placed to operate small machines requiring only an insignificant amount of power, all of the larger machines are run by motors mounted upon their own frames. How this is accomplished will be readily understood by reference to the engravings. The electrically driven machines include planers, blowers, multiple and single

In most machines there is some place on the frame where the motor can be placed. From an article on this subject by S. S. Wheeler of the Crocker-Wheeler Company, in a recent number of the *Electrical Engineer*, we take the following:



ELECTRICALLY DRIVEN LATHE.

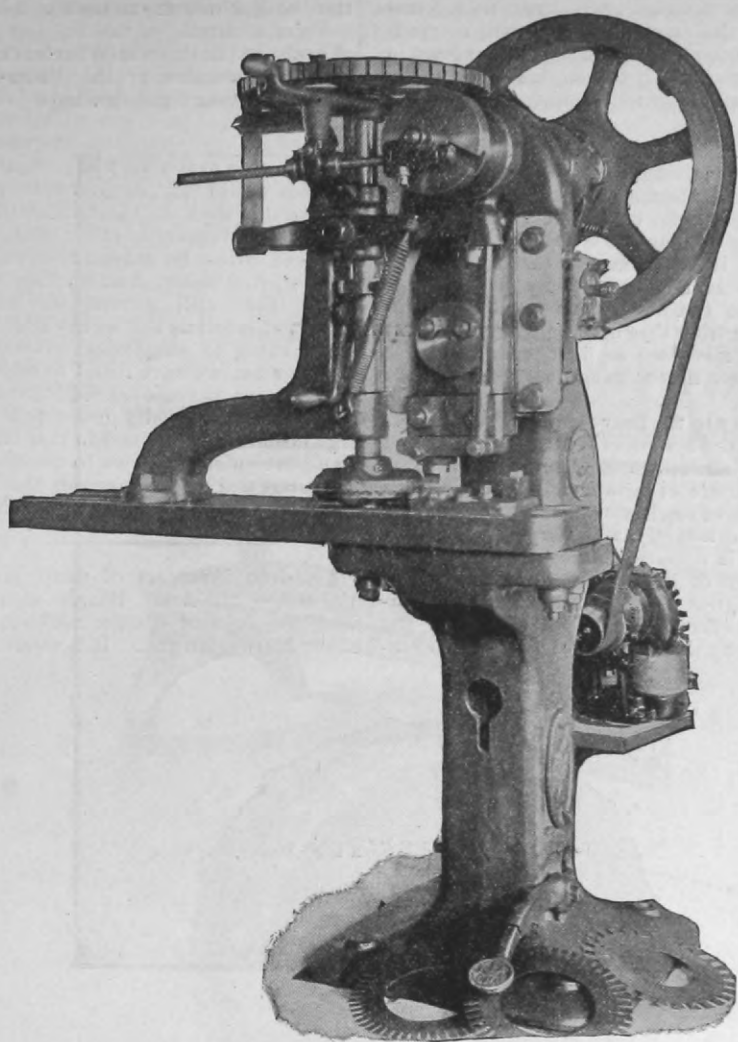


ELECTRICALLY DRIVEN PIPE-THREADING MACHINE.

plied by electric motors. The peculiar feature of the equipment is that, with the exception of a few short lines of shafting placed to operate small machines requiring only an insignificant amount of power,

spindle drills, sheet-metal shears, shapers, lathes, presses, pipe-threading machines, &c. With only two or three exceptions, it was not found necessary to change in any way the form of the machine driven.

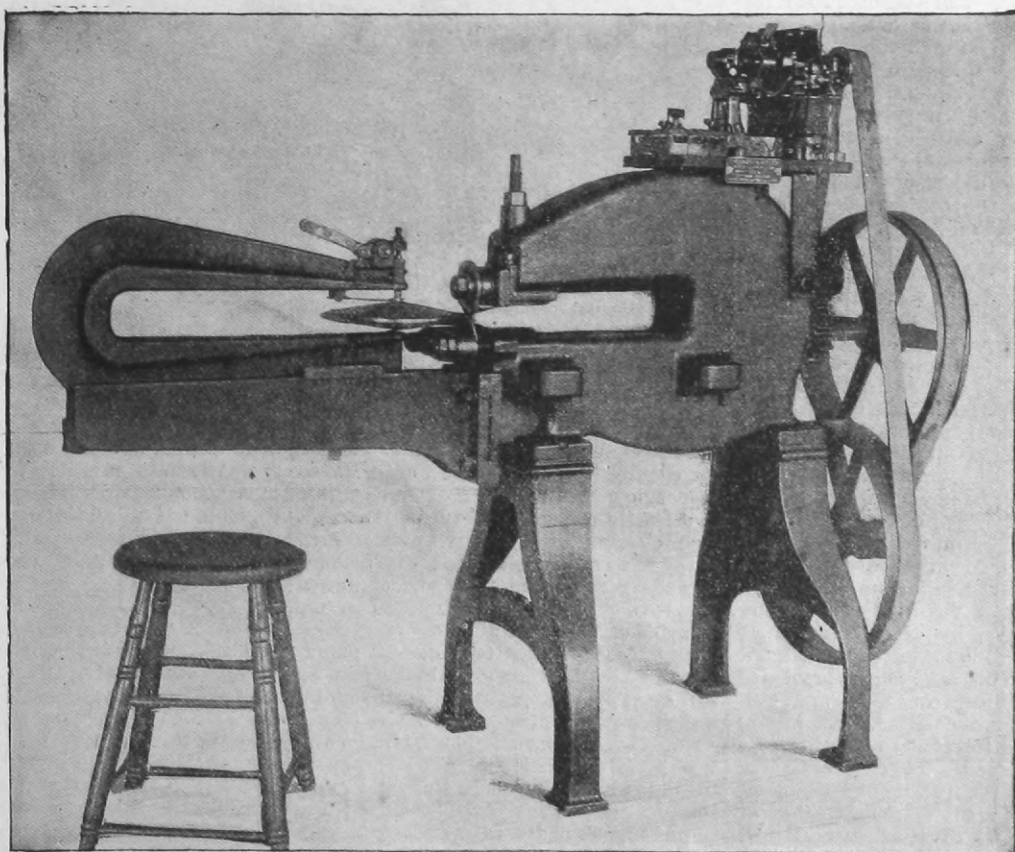
I have concentrated no little time and money on the many different problems of so adapting or modifying electric motors that they may be built directly into such tools as lend themselves to the purpose, in place



ELECTRICALLY DRIVEN PRESS.

changes now being introduced by the use of electric power in this direct manner. This important class of improvement is immediately suggested by the appearance of the temporary rigs, in a shop using electric power, but, like many other things, it had not been given attention by most persons until the use of electricity for power had become pretty general. After adopting a line of electric bars or mains through a shop in place of the ordinary revolving shafting, and after belting a few motors to lathes and other tools and connecting them to the bars, it is easily seen that much better mechanical arrangements could be made by building in the motors as an integral part of the several tools. This construction gives rise to directly connected machine tools, a new line of machinery destined, in my judgment, to be of very great importance. The machines employed at the Crocker-Wheeler works are the regular standard tools of the market, but with motors combined, both being properly proportioned for their purposes, so that when the small flexible cable or lamp cord is connected to them from the power line they become operative and are self-propelling tools, readily portable if desired. Machinery of this kind obviously has a number of important advantages. It requires no setting up. It can be moved and then used so readily that it makes temporary shifting of machinery to meet requirements of extra work in one department practicable. A single tool can be run at any time without running others, thus saving all shafting friction, &c. The tool having no belts, and the power being generated in the head stock just where it is consumed, the machine runs much more quietly, &c.

Quite a variety of direct connected machines have already been built and put in use with such success that we now propose and are prepared to design motors for all classes of machine tools. A brief description will, I think, be found of general interest. The electric lathes, for example,



ELECTRICALLY DRIVEN SHEET-METAL POWER SHEARS.

of belting the motors to the countershafting here and there. Some tools invite this treatment much more than others do, and in the future I believe that the tools of newer design will owe their specific shape and construction very largely to the

are built on this principle, the motor armature taking the place of the belt pulley and the field magnet frame being part

of the lathe bed, securing simplicity and rigidity. The tool possesses many advantages suggested by the hints above, and I recommend it for all machine shops, laboratories, &c., where electric current can be obtained. Other small tools, such as monitor or screw machines, are, of course, fitted up in the same way. I illustrate a large screw machine provided with its own motive power or motor which is capable of delivering $\frac{1}{2}$ horse-power.

Motors have been applied to portable shapers in the manner shown in the illustration, the use of electric power rendering it possible to carry the tool to the work in cases where the work is very heavy, such as dressing armor plates when in position on vessels, trimming very heavy castings, &c. After all, it is often more natural to take the tool to the spot and use it there, and this innovation may lead to some change in factory construction. The tool is taken to the work and clamped to it by the bolt slots on the under side of its bed plate, and a sufficient amount of power (1 horse-power) to operate it, even with the heaviest cuts, is carried to it from the electric mains through a small flexible cable wherever it may be moved about. The reversed motion of the shaper is produced in the usual way by a crossed belt, and the high motor speed is converted to the slow speed for the tools by means of a worm gear.

The electric drill press is still another application of the same idea. The spindle of the drill press becomes the shaft of the motor, and while continually revolving with the armature may be moved downward to follow the drill when boring a hole. The operator starts and stops the machine by turning a switch attached to its side, so that current is consumed only when the drill is in actual operation. A drill press, as usually set up, requires two countershafts, four belts and two mule pulleys. That is really a serious array of power-wasting parts. The direct connected motor saves all this. The power absorbed by the motor when doing full work is not much more than that required for an ordinary incandescent lamp, and may be conveyed through a flexible wire not larger in diameter than an ordinary darning needle. This combination, obviously, can quickly be moved from one part of the shop to another and put to work immediately without the usual trouble of lining up to main and countershafts and belting, as required by the ordinary drill press. Having no belts it runs much more quietly and easily.

I am glad to be able to show also another very interesting direct application, namely, the operation of sheet metal power shears. The $\frac{1}{2}$ horse-power motor while attached directly to the tool is geared up by belting, passing over intermediate pulleys, which at the same time serve as belt tighteners by being adjustable vertically. The power required for the work is much reduced by the directness of application. The machine can be stopped and started in an instant by the switch knob near the motor, and can be moved to any part of the shop and used at once without the troubles incident to lining up.

In shops already provided with a number of tools driven by belting, and where it is found desirable to introduce electric power, the motors are simply bracketed to the ordinary form of tools, and connected by means of belting. An idea of this may be had from the illustration of a $\frac{1}{2}$ horse-power electric punch press. The machine shown is a special one ingeniously arranged with a dividing head or index for notching armature plates consecutively, according to the number of teeth in the index plate used. Still another variety of application is shown in the electric pipe threading machine, which needs no special description, as its operation is precisely the same as with all machines of this character.

In connection with these direct driven tools it may be well for me to call attention to the absolute practical results which have already been obtained by the use of electricity in machine shops, than which no subject can be of greater interest to manufacturers.

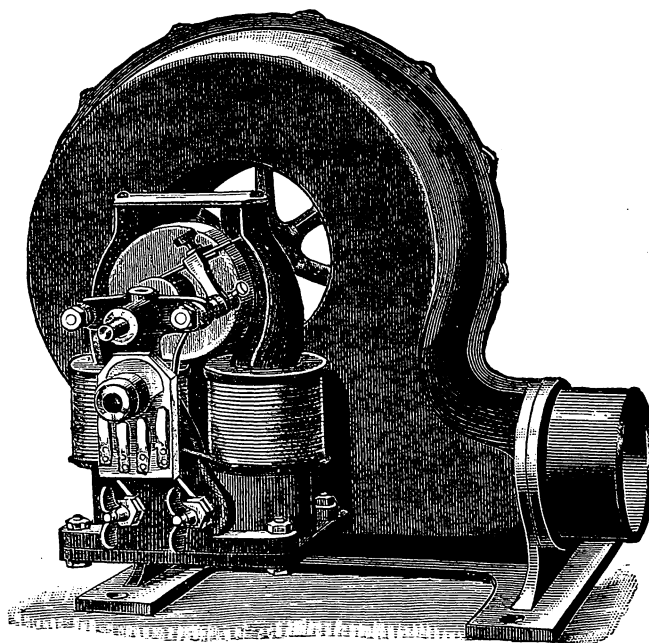
Under the usual manufacturing conditions involving the driving of tools or machines intermittently operated, only 15 to 25 per cent. of the total power supplied by the engines is expended in useful work. It is well known that a very large portion is required simply to move the great pulleys, belting and shafting, which, starting from the engine room, convey the power from floor to floor, and distribute it to the different wings and parts of the factory.

Owing to the heavy and cumbersome nature of the system of shafting, pulleys and belting alluded to, not only does the great expenditure of power required to move these mere carriers or conveyors of power go on constantly, whether the whole factory is in operation or only the most distant part of it, but so great is the friction of the great moving mass that no proportionate effect is felt at the cut-off of the engine by the minor and constantly occur-

the same time, by instant and close regulation of the power, to obtain a higher quality of product.

At the new Crocker-Wheeler works the lines of jack shafting and counter-shafting, with belts and pulleys, have been replaced by copper bars from which current is tapped at any point, and the tool is at once available over a very large floor area. Where it would take, say, an hour or two to bring the work to the tool, with consequent interruption of other work, these tools can often be ranged alongside the work in five minutes. And whether moved or not they still present the inherent features of economy and utility that I have been seeking to emphasize. It seems to me that what we have found so eminently suited to our purpose as builders of machinery must be equally desirable in other large machine shops; and in that faith we have gone quietly to work to ascertain the best forms and to demonstrate the actual elements of saving and benefit involved.

American inventors of small arms on trial before the Army Board, at Springfield, complain of discrimination in favor of the Norwegian gun. It is asserted that



ELECTRICALLY DRIVEN BLOWER.

ring stoppages in the use of a large part of the individual machines, lathes, looms or tools. These single and short stoppages aggregate an enormous amount of time and therefore of power and coal wasted. An electric system can be furnished so connected with the cut-off of the engine, so perfectly responsive and sensitive to all such changes of intermittent work, even to the most minor ones, that the amount of energy demanded from the engine is only that actually being employed in the doing of useful work.

Any candid and fair-minded manufacturer can be shown, I think, that he will save, by a properly designed and installed electric plant, from 30 to 50 per cent. of his coal bill, besides having a system greatly superior in every respect to the old one. The manufacturers of these electrical tools have given especial study to this branch of the practical application of electricity, but are very glad to be favored with the advice and suggestions of manufacturers and factory owners, many of whom have noted instances in their own experience of opportunities thus to economize in the use of power, and, at

the board has receded from the position that it took with the Krag-Jorgensen arm, where it not only permitted the inventor to make improvements but suggested them to him, and has now refused to allow American inventors to replace any small and unimportant part of the arm which may be accidentally broken during the trial, claiming that only what was submitted prior to March 31 was to be tested.

The loss of two consecutive crops in Mexico causes much general hardship, and operates to curtail the Government revenues. The State Department estimates for the present year, including new taxes, raise the total receipts to nearly \$42,000,000, as compared with less than \$40,000,000 last year. But with the expected new additions there is a prospective deficiency of about \$3,000,000, and as it would be difficult to place a Mexican loan while credit is so much impaired by occurrences in South America, the Government is liable to experience much embarrassment. The depreciation of silver aggravates the situation.

The Cooper Engine.

The principal features of the high-speed, self-contained, center-crank, automatic engine, built by Cooper, Roberts & Co., of Mount Vernon, Ohio, are illustrated in the accompanying engravings. The engine is provided with two outside overhanging wheels, one of which contains the governor, the other being used for the driver, though either or both wheels may be used for driving.

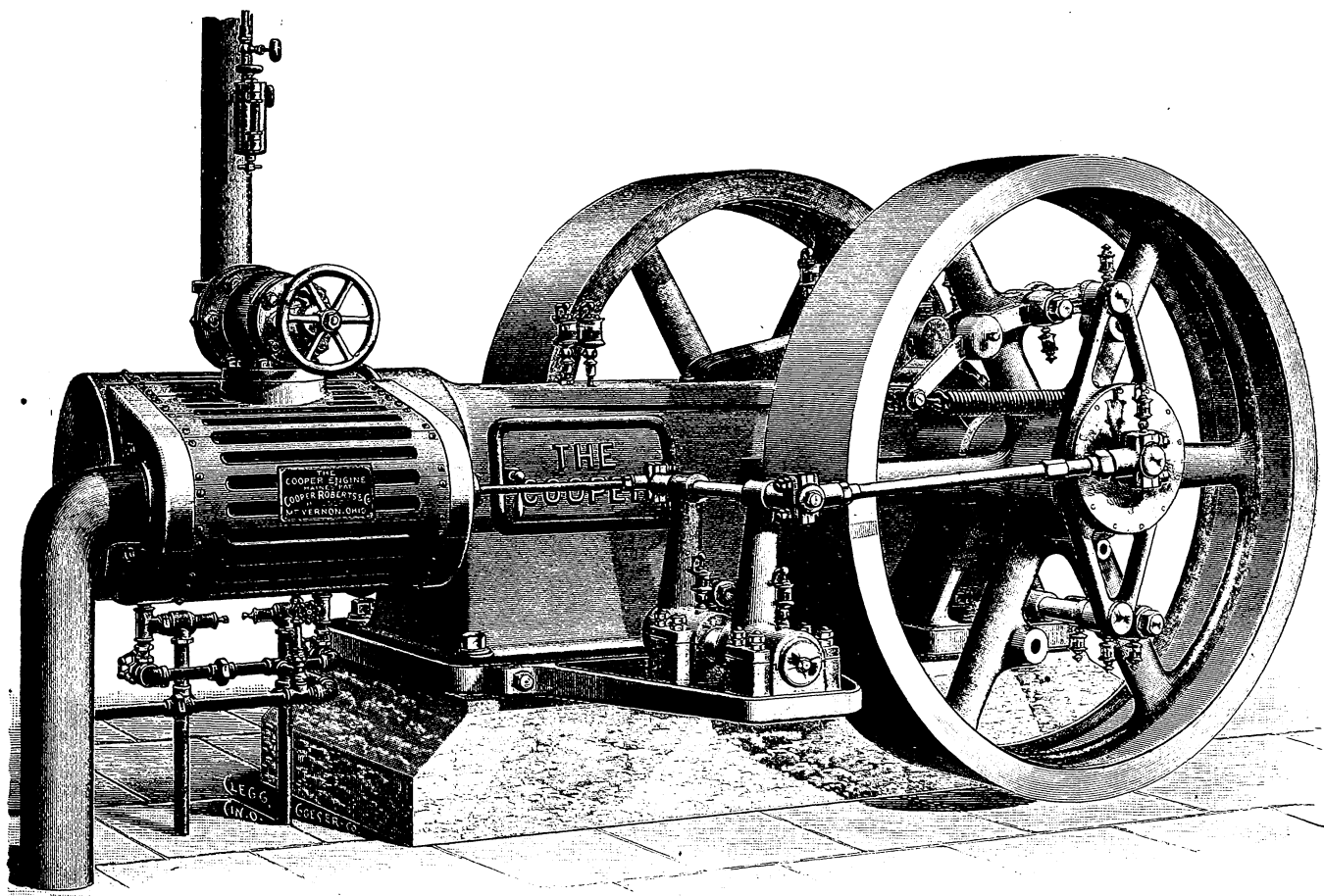
In designing an engine of this kind one of the most important considerations is the type of bed plate. The frame of this engine is a combination of both the girder and straight line, with the metal so distributed as to receive the varying strains without either deflection or vibration.

undue pressure that may be caused by condensation or an overflow of water from the boiler. The back head of the cylinder and both ends of the steam chest are covered by caps, covering all nuts. The front or intermediate head is bolted between the frame and cylinder.

The shaft is of forged steel, having cast iron counterbalancing disks fitted and keyed upon it. The shaft and crank pin are of the same diameter, the length of the pin being the same as the diameter, and are so proportioned as to be one-half the diameter of the cylinder.

The piston is hollow and fitted with a bull ring for the reception of two self-adjusting packing rings. The piston head is forced on the piston rod up to and against a shoulder, and is further secured by a jamb nut on the end of the rod. The

ism, by which the eccentric has its center moved nearer to or further from the center of the shaft, but always in a straight line, thus maintaining a constant lead or admission at all points of the cut-off, obviating all possibility of the engine's racing. Another feature is that the adjustable weights on the levers are such as to practically counterbalance the weight of the eccentric. The object of this is to prevent the weight of the eccentric from disturbing the proper circular path through which the eccentric rotates, and thus obviate the disturbance that would occur from the tendency of the eccentric to fall toward and below the shaft in the path of revolution. The parts are so arranged in relation to one another that when the eccentric is at its point of greatest travel and most rapid motion the links and levers are



THE COOPER ENGINE.—GOVERNOR SIDE.

The frame is strong and rigid, having a broad, heavy, flanged base to rest upon the foundation; it is ribbed internally, and so formed as to allow the working parts to be incased, keeping them free from dirt and preventing waste of oil. The head end is bored, faced and fitted to receive an intermediate head, and the guides are bored out on the same line of centers. The main bearings are lined with babbitt metal, which is hammered in, bored out and scraped perfectly true for the reception of the shaft. Removable liners are provided for the purpose of taking up any wear. The cylinder is secured to the end of the bed plate and overhangs; it contains in one casting the steam chest, which is on the side and bored perfectly true, and fitted with two bushes for the reception of the valve. Both the cylinder and steam chest are covered with a cast-iron jacket, the intervening space being filled with a non-conducting material. Locomotive water relief valves are fitted to the cylinder for the purpose of relieving any

head, follower plate, and rings are made steam-tight by ground joints. The crank-pin box and cross-head boxes are of phosphor bronze, the first being lined with babbitt metal, hammered in and accurately fitted to the crank pin. Provisions are made for taking up the wear in both boxes. The cross-head has phosphor bronze shoes, the length being equal to the length of stroke of the engine and the width being equal to one-half the length.

The valve is of the hollow piston type, as shown in the plan view, with self-expanding rings, making it perfectly steam-tight. It is entirely surrounded by live steam, pressing equally on all sides, thus keeping it in perfect equilibrium.

The governor, shown in the side elevation, differs from the usual type of shaft governor in that it has a parallel movement across the shaft instead of a pendulum movement. This parallel movement is obtained by one arm of the eccentric being connected to the arm of the wheel by a link and the other by a lever mechanism,

at right angles to its arms, to which they are connected, so that the increased thrust of the eccentric falls upon the links and levers, and thus prevents the springs from being put to an unequal tension. This equalizes the connected parts and steadies them. The equilibrium thus obtained is practically sufficient to relieve the springs and levers from the disturbing element always found in a varying, unbalanced, centrifugal force generated by the governor mechanism when moved to different positions to answer the requirements of varying the point of cut-off. The levers are of the same power and combine on one pivot, one on each side of the arm of the wheel.

The spiral springs are attached to one end of the levers by means of a swinging link, and the other ends of the springs are hooked in an eyebolt passing through an opening in the head of a swivel bolt, pivoted through a boss on the wheel, and engaged by a nut on the opposite side of the boss, for the purpose of adjusting the springs. This arrangement of the springs

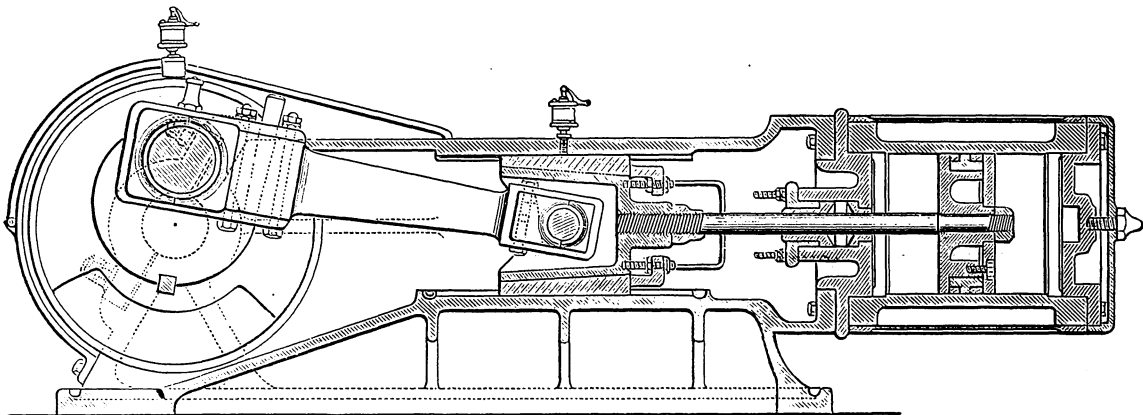
permits the swivel bolt to adjust itself, and allows the springs to move outward in a straight line without the buckling caused by centrifugal force.

The eccentric is without straps, thus making it entirely free from friction. To its side and covering the end of the shaft is secured a polished pin plate, to which is fitted a wristpin for the eccentric rod,

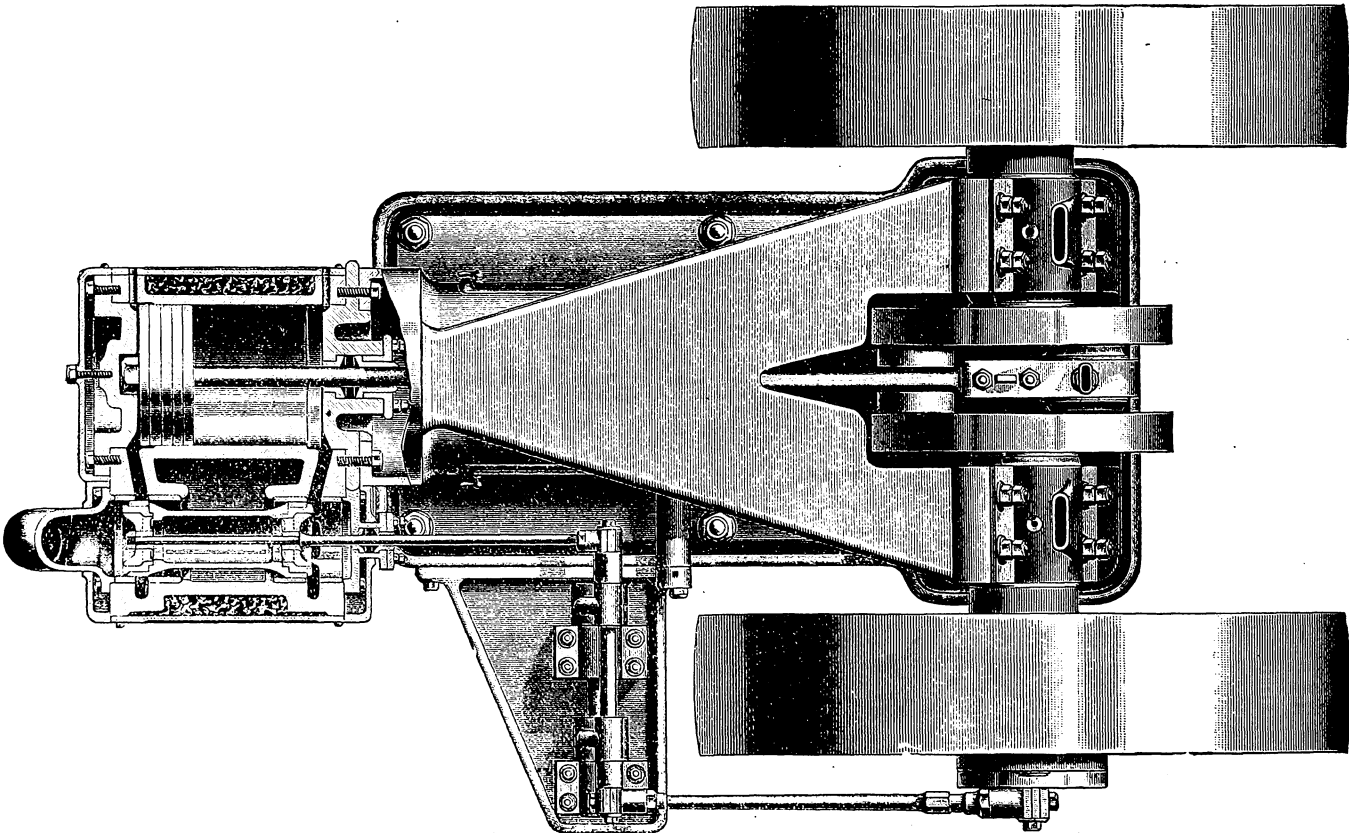
speculators the difficulties in obtaining accurate statistical information are manifold. For this reason official reports are received with hesitation, especially since it is known that last year's crop was greatly in excess of the estimates of the Agricultural Bureau, as shown by the surprising amount that now remains in farmers' hands. After a careful survey of the wheat situation a

Engineering and Literature.

One of the most interesting speeches given at the recent annual banquet of the Institution of Civil Engineers in London was that of Prof. James Bryce, M.P., the eminent historian and author of "The American Commonwealth." Mr. Bryce, in



Vertical Section.



Sectional Plan.

THE COOPER ENGINE.

leading to and making the connection to the valve through the rocker shaft.

The construction of the governor is such that the friction of the bearings carrying the links and lever mechanism has no influence on the springs and levers and does not disturb the eccentric moving mechanism.

Among grain traders conjecture is already active respecting the present condition and final outcome of the winter wheat crop that in some sections will soon begin to mature. Where interests are so conflicting as between producers and professional

definite conclusion is warranted. Briefly stated it is certain that the United States has on hand more than 200,000,000 bushels of wheat, not including large quantities of flour, and there is not the slightest probability that as much as 140,000,000 will be wanted for home consumption, or export, before July 1. If 60,000,000 bushels is carried over, that will compensate for a decrease of 30 per cent. in the yield of winter wheat, in the States where injury is reported. But if winter wheat is really injured, and prices are advanced, increased sowing of spring wheat will make up some proportion of the loss.

replying to the toast of "Literature," said that he felt a little difficulty in speaking, due to the apparent remoteness of literature from the work and business of the Institution of Civil Engineers. Literature must appear to them, as practical men, a vague and unsubstantial thing, and he could not even find any points of similarity in the results which the two professions of engineering and literature produced upon those who followed them. Engineers were nearly always men of great wealth, whereas most literary men starved in their garrets. And if he came to the great branches of literature, if he began with

the highest form of literature—poetry—he found what seemed to be an antagonism between it and engineering. Wordsworth was most anxious to keep engineers and railways and everything connected with them out of his Lake Country, and Lord Tennyson was no less anxious to keep them out of his end of the Isle of Wight. He believed that our two great living poets, Mr. Swinburne and William Morris, were of the same opinion as the two last laureates. They might perhaps consider that they had met with better treatment from the writers of imaginative fiction, whom they had enabled to transfer their characters from place to place and give them an opportunity of striking scenes in railway and colliery accidents. He had never yet heard of an engineer being represented in a novel as a villain. Clergymen were often represented as hypocrites, lawyers as betraying the interests of their clients, doctors as poisoning their patients; but he had never yet read in a novel of a wicked engineer, not even if that engineer happened to be a baronet, and they knew, he said, that of all grades of society baronets were most frequently wicked men in novels. Engineers, in changing the face of this globe, were, he said, supplying new materials for the historian and the student of economic science, and were creating new factors in commerce and the history of commerce. They pierced mountains, changed the course of rivers, and connected islands to continents. There was perhaps another aspect in which he might compare engineering with literature, and it was that by their work they developed and represented one side and aspect of the life and efforts of an age, as literature did another side and another aspect. Literature claimed to be the fullest and the truest exponent of the thoughts and emotions of each generation. Literature was the record by which each generation transmitted its intellectual life to those who were to come after it, and similarly the engineer, inscribing upon the face of the earth in enduring characters of stone and iron the records of his skill, was handing down to future generations one great part of what our age was doing, and making it memorable and intelligible to them. As ancient Rome had left for herself a perpetual memorial, not only in the enduring influence of her law, and the works of her great poets, but also in the roads and bridges and aqueducts with which she decked her empire, and which had been constructed with such strength as scarcely to feel the touch of time, so our production in this Victorian age would live into a distant future, not only by the brilliance of its literature, which, as we hoped, was destined to last as long as the calculations of Lord Kelvin would allow our globe itself to last, but also by those monuments of skill and industry with which British engineers had filled not only this island of ours, but our wide dominions beyond the sea.

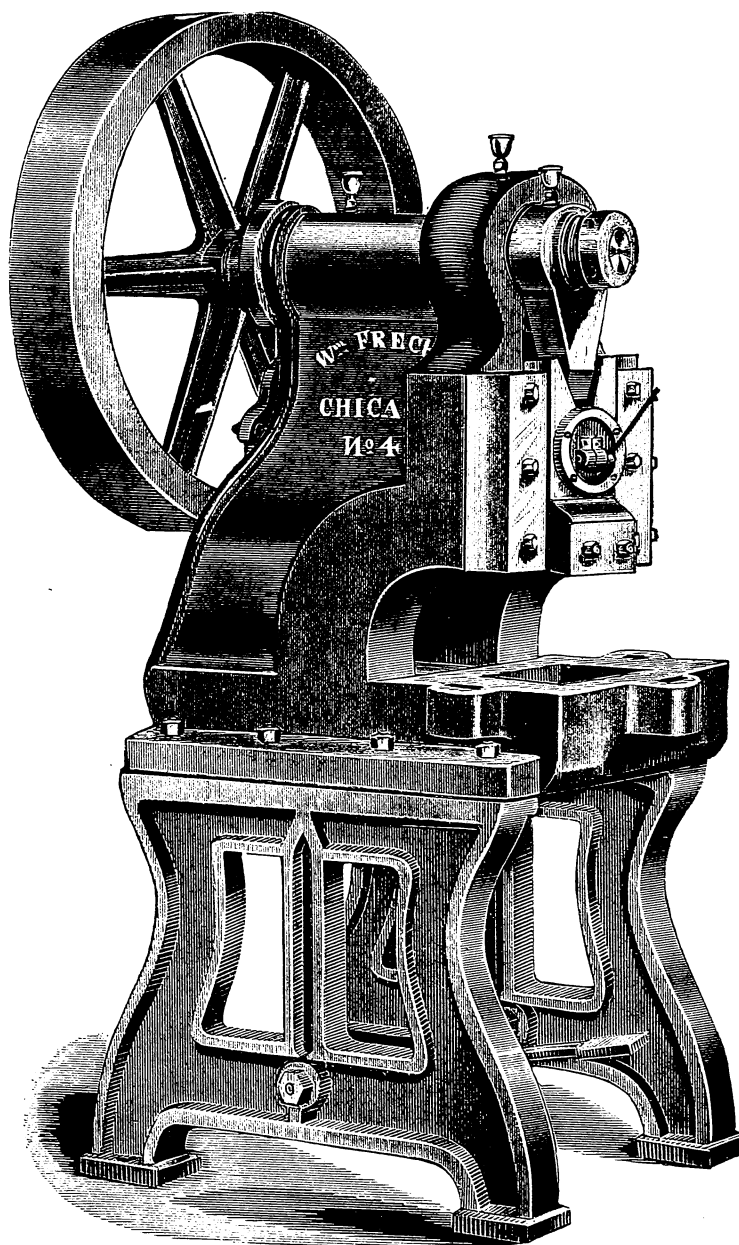
Sometime ago D. E. Park of Park Brother & Co., Limited, of the Black Diamond Steel Works, Pittsburgh, purchased the old post office property in Pittsburgh. When the time arrived to make the final payment Mr. Park notified J. G. Carlisle, Secretary of the Treasury, that he would send gold to the amount of \$390,150 in case the Government would accept it. Mr. Park has been notified to make the payment in gold, and it will be forwarded to the sub-treasury in New York City this week.

The Lake Superior iron companies at Ishpeming, Mich., employing 1200 men, began work on the eight-hour system last week, giving the same wages for eight hours as they formerly paid for ten.

The Frech Punching and Forming Press.

Among the more recent improvements in this class of machinery is the press built by the Frech Machine Company, 75 and 77 West Van Buren street, Chicago. As shown in the perspective cut—from photograph of the No. 4 machine—the general features of design embody the two essential qualities of strength and convenience in operating. The depth of throat permits the handling of wide sheets, while the arched opening through the base of

ground to fit. Owing to the close grain of the quality of iron used in the casting and the large amount of bearing surface, the accurate fitting of the journals remains intact for an indefinite time, as no appreciable lost motion is caused by several years' continuous use. The shafts are of hammered steel and of large diameter—the latter, of course, being proportionate to the stroke of the head—and the crank-pin is turned down from the solid metal. The size of the shaft used with the No. 4 machine is 6 inches diameter for $1\frac{1}{2}$ -inch stroke, thus permitting the diameter of the crank-pin to be $4\frac{1}{2}$ inches. In the



THE FRECH PUNCHING AND FORMING PRESS.

the housing allows the passage of sheets lengthwise to a width not exceeding 13 inches. The bottom plate of the housing is securely bolted to the supporting frame, which is made very heavy and affords a large amount of supplementary strength and rigidity to resist the springing tendency from working the machine at its maximum capacity. The housing is made solid from the top of the opening to the crank-shaft bearing, the latter being heavily ribbed at the crank end to resist the tensile strain of the working stroke. No bushings are provided for the journal bearings of the shaft, they being formed of the cast-iron surfaces, lapped perfectly true and smooth, and the shaft journals

actuating device there are no peculiar features, the engagement of the shaft and its automatic release at the end of the up-stroke being by means of the treadle operating the ordinary pin-clutch.

The most important feature of the machine, which has been made the subject of a recent patent, is in the method of adjusting the stroke of the head—or, more specifically, the device for maintaining the adjustment. The designer of the original machine, Wm. Frech, considering the use of the ordinary eccentric bushing on the eye of the pitman to be objectionable, substituted therefor a screw device for lengthening or shortening the pitman. The adjustment was made by means

of a cylindrical nut, which was retained in position after setting by a spring pawl or keeper attached to the pitman. This arrangement, however, after several years' use, was considered unsatisfactory for several reasons. Of course, the ratchet teeth engaged by the pawl limited the adjustment, as the latter could not be made finer than the pitch of a screw divided by that of the ratchet—i. e., with a screw of $\frac{1}{4}$ -inch pitch, and 25 ratchet-teeth, it would be limited to $\frac{1}{100}$ -inch. For ordinary through punching this would be sufficiently close; but the many other uses for which such machines are designed—such as stamping, pressing, straightening, &c.,—require that the fineness of adjustment possible shall not be restricted to any arbitrary limit, which would necessitate recourse to some such makeshift as packing under the punch or die with paper or other thin material. Also, as the thread in the nut was required to fit the screw freely enough to permit of its being turned with comparative ease, it was found that the strain of working pressure was sufficient to cause the nut to turn gradually but surely, and either throw out or break the keeper. As this might, and frequently did, happen unobserved by the operator, the loss of adjustment was liable to cause considerable damage and annoyance; and the device was, therefore, discarded in favor of the one shown in the drawings, Figs. 2 to 5. From an examination of the arrangement, it will be seen that the objectionable features of the original device are corrected, while the simplicity of construction has been retained. The lower end of the pitman or

body being of the size of those in the nut. By then turning the latter to right or left, as required, the exact adjustment may be obtained, and the nut is then closed tightly on the body of the screw by the compression band and screw *f*. It is obvious that this clamping of the nut must hold it securely, as it has a powerful frictional grip internally on the screw and externally in the band, the lugs of which are accurately fitted in the opening in the bearing *b*. The adjustments are easily and quickly made without necessity for the operator to leave his seat at the front of the machine, as the head is moved as required by rotating the crank shaft with a short bar provided for the purpose. In all changes of work the punches, dies, &c., and the entire operation of setting the machine, the only tools required are the

Steam will be supplied by three boilers. The estimated carrying capacity of the vessel is 4000 tons.

The Armour Institute.

President F. W. Gunsaulus of the new Armour Institute, Chicago, is now enthusiastic over the rapid progress now being made by the different scientific departments of the institute. He said in a recent interview: "The need of greater facilities for work in physics, as preparatory and supplementary to the more technical training of students in the various departments of engineering and other branches, is being felt more and more every year. To meet this demand courses have been arranged in mechanics, heat, light, sound and the elements of electricity. Laboratories equipped with the most recent forms of apparatus are nearing completion and will be open to students in September. In the earlier grades general outlines of the elements of physics will be taken up, laboratory methods studied, and habits of observing phenomena and depending upon personal observations cultivated. Quantitative work will be introduced as early as possible. Physics is a science of measurements and will be treated as such from the beginning. More advanced work has been mapped out for the students who have had preliminary training, and every advantage and incentive will be offered for original investigation."

The directors of the Armour Institute announce that Prof. W. M. Stine, formerly of the Ohio State University, has

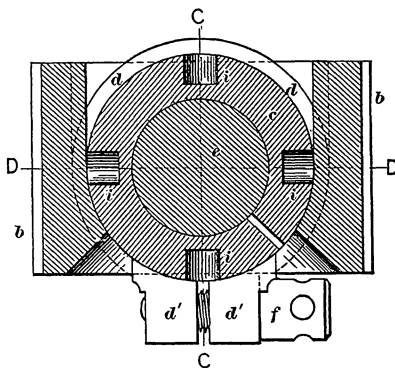


Fig. 4.—Horizontal Section on Line A A.

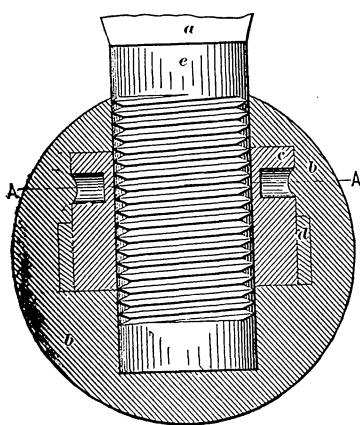


Fig. 3.—Vertical Section on Line D D.

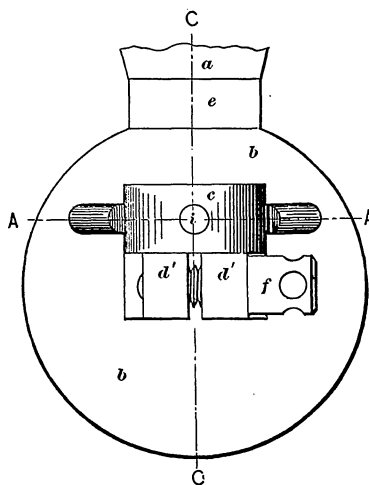


Fig. 2.—Front Elevation.

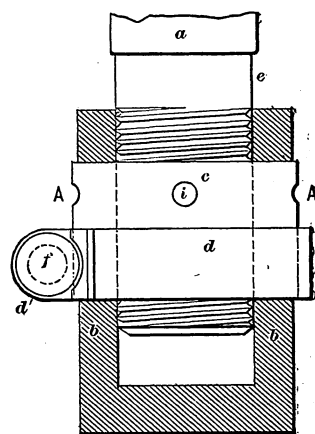


Fig. 5.—Vertical Section on Line C C.

THE FRECH PUNCHING AND FORMING PRESS.

vibrator is shown with the adjusting and retaining devices and the cylindrical bearing by which it is connected with the head. The vibrator *a* and screw stem *e* are formed in a single steel forging. The screw is made of length to admit of adjustment of $1\frac{1}{2}$ inches, and it is accurately centered in the oscillating bearing *b*, made of forged steel. A concentric recess in the latter receives the split nut *c*, the thread of which is chased to form a snug fit on the screw without compression. Embracing the lower half of the length of the nut is the split collar or compression band *d*, whose lugs, *d'*, passing through to the front of *b* are provided with a screw, *f*. It is seen—Figs. 4 and 5—that both nut and collar seats cut through the front and back faces of *b*, but in such a manner as not to impair its strength under compression. To make the adjustment the screw *f* is loosened by means of a short bar fitted at one end to the holes in the head, the

two small bars mentioned and a single open-end wrench fitting all nuts and bolt heads necessary to the purpose. It should be mentioned that the holes *i i* in the split nut are hardened to prevent wear from the careless use of the adjusting bar, while the thread remains soft and unaffected by the process. The presses of all sizes made are provided with covered brass oil cups to all bearings, and the latter may be regarded as practically dust proof.

The largest vessel on the northern lakes is the steamship "Curry," launched from Wheeler's yard in Bay City April 27. The new boat marks a return to the early principles of marine architecture, in that her boilers and machinery are placed amidships instead of far in the stern, as has been the common practice on the lakes. The "Curry's" dimensions are: Length of keel, 360 feet; length over all, 378 $\frac{1}{2}$ feet; molded depth, 25 feet; beam, 45 feet.

accepted the position of professor of electricity, magnetism and electrical engineering. The institute will be formally opened for class and laboratory work Tuesday, September 14, 1893. Professor Stine has consented to take charge of the department of electricity and electrical engineering during the World's Fair, so that the students may benefit by the unexampled opportunities there afforded.

British manufacturers of agricultural machinery and hardware acknowledge that in South America the United States are in keen competition. The country offers a large and rapidly growing market, but to succeed the British are told by their consul at Santa Fé, Argentina, that they must adapt themselves to circumstances and comply with the conditions of credit ruling in the country, and especially be prepared to exhibit samples of goods by agents on the spot.

WORLD'S FAIR NOTES.

The claim steadily made by its promoters, that the Chicago Exposition would surpass its predecessors in every respect, has been strengthened by the enormous attendance on the opening day. There were nearly 400,000 visitors present, not counting employees, exhibitors and their attendants and others connected with concessions, &c., whose numbers ran well up into the thousands. It was the greatest day thus far in the history of international expositions. Encouragement has thus been given to the somewhat extravagant expectations which have been indulged in by the people of Chicago who are most directly interested in the success of the fair. The attendance on the following day fell to 14,000 paid admissions, and perhaps doubled this number for the remainder of the week, but that was expected in view of the incomplete condition of the exhibits and the disagreeable weather. Chilly blasts have swept down from the north, and heavy rains have fallen, making a visit to the grounds extremely unpleasant. In some respects such weather has been more welcome than days of balmy sunshine. Attention has thus been diverted from the tardiness of exhibitors, who have meanwhile busily pushed the work of installation. From a general survey this work has made slow progress, and is still far from being complete. Going more closely into details, however, one finds a vast multitude of exhibits in perfect order and ready for the most critical inspection. But their unkempt neighbors detract from their appearance, and until all booths are finished, all exhibits installed and all rubbish is cleared away the visitor will overlook that which is pretty and think of that which is unsightly. The exhibitors are not alone to blame for this tardiness in completing installations. The transportation department on the grounds must take a large part of the censure. A great deal of material has been in the grounds on cars for days, and the utmost exertions of exhibitors have been unavailing to secure the delivery of such cars at the points where they are to be unloaded. The writer has met a number of these, whose experience has been most exasperating. They have lost days of valuable time, merely waiting for the shifting of a car for the space of three or four blocks, and meanwhile hear themselves denounced as a class for hindering the completion of exhibits. In due time these matters will all be straightened out, but it does take time and more of it than had been anticipated. The Director-General has ordered that no more exhibits will be received after the 12th, so that at least the end of shipment to the fair is in sight, and the work of installing cannot extend much beyond that.

The W. Dewees Wood Company.

Among the completed exhibits in the Mines and Mining Building is that of the W. Dewees Wood Company of Pittsburgh, manufacturers of patent planished sheet iron. Their exhibit is very striking and most appropriate. It is composed wholly of patent planished sheet iron. In the first place, the inclosure is surrounded by a tubular railing with square posts, very ingeniously constructed of sheet iron. The posts have ornamental caps, surmounted by a nicked knob. The bars of the railing are made with a lock seam, placed on the under side so as to be invisible. The chief feature of the exhibit is a large column with a square base, on which stand four pillars, one on each corner, with a heavy fluted pillar in the center, supporting a roof, which recedes by gradual rises to a pedestal. Here is placed a large gilt representation of the company's

trade-mark—an eagle with outstretched wings triumphant over a prostrate bear. In another part of the inclosure is a rack filled with sheet-iron oven doors, stamped in pretty patterns. Stove pipe, stove cylinders, elbows and specimens of plain sheet iron are tastefully arranged near by. A sheet-iron table, of the parlor center table type, is a very interesting specimen of the ingenuity and skill of those who designed this most interesting display.

The Mines Building in General.

While great progress has been made in the installation of exhibits in the Mines Building during the week, much still remains to be done. The official catalogue has been issued, but it is by no means complete or accurate. Reassignments of space have been made within a few days in consequence of some exhibitors having failed to make their appearance. Several foreign countries have just begun the erection of their pavilions. This is very disheartening to Chief Skiff, but he has been unable to control everything. The visitor to the building finds on all sides exhibits covered with muslin, behind which workmen are busily engaged putting affairs in order. Enough is visible, however, to confirm the opinion heretofore expressed that the display in this department when complete will be superb.

The Charge for Power.

The assertion has been made in some of the daily papers that exhibitors in Machinery Hall are complaining because they are obliged to pay for power when they run their machinery continuously. It is rather singular that such complaints should be made now. This whole matter was settled a long time since, and intending exhibitors were advised of the fact that a charge would be made of \$60 per horse-power for the whole term. In an interview on the subject last week, Chief Robinson said:

"The question of charging for motive power has been thoroughly canvassed and the basis of rates was established three or four months ago. There was no special committee appointed, but the matter was discussed by the Director-General, Mr. Burnham, Mr. Sargent and myself, and the amount to be charged was then referred to the commission several times for ratification. The result was that the limitation of power was embodied in rule 1 in the classification and rules of the department of machinery, which is as follows:

Exhibitors will not be charged for space; a limited amount of power will be supplied gratuitously. This amount will be settled definitely at the time space is allotted. Power in excess of that allotted gratuitously will be furnished by the exposition at a fixed price. Demands for excess must be made before the allotment of space.

"Now this is plain as can be and there is no possibility for a kick. The interpretation of 'a limited amount of power' is the amount of power necessary to turn a machine over to show its workings. The maximum amount under this construction is the amount necessary to turn the heaviest machine. The power is to be furnished at the discretion of the chief to prevent overstraining the shafting. If the exhibitors wish to run their machines continuously they must pay for the extra power used pro rata. If they only need a half horse-power it will cost them \$30 for the season. There is no other alternative. This department is not run on a philanthropic basis, but is business, and we expect to make \$40,000 or \$50,000 out of power furnished. We furnish light and power free to the grounds and big buildings, but the State buildings, individual exhibits and concessionaires must pay for light and power or they will not get it.

The exhibits will stay in their places and they will not be covered up, either."

An Accident in Machinery Hall.

Three men were injured on Friday by the bursting of a head on a 16-inch steam main in Machinery Hall. The escaping steam seriously scalded a railroad employee, coupling cars near by, and two laborers were painfully, but not severely, hurt. Huge timbers in the foundations were cut by the flying mass of metal, and considerable damage would have been done if the steam had not been quickly cut off. It is stated that the head which gave way was a perfectly sound casting, and that it must have been too thin to withstand the heavy pressure.

The Question of Sunday Closing.

Although Congress imposed upon the fair authorities the condition that the exposition should be closed on Sunday, the matter is not regarded as absolutely settled, but seems even yet a debatable question. Local influences are being exerted very strongly in favor of ignoring the action of Congress and braving the consequences. At a meeting of the National Commission last week this topic was discussed, and Commissioner Massey said:

"The whole matter, in my opinion, has passed beyond the power of this commission to deal with. The commission had a duty to perform which it has discharged according to the mandates of the statute. I deny that the commission can hereafter lawfully make an order modifying the rule of Sunday closing. When Congress specified the conditions of the \$2,500,000 gift and declared that the exposition should be closed on Sunday, it commanded us to pass a rule; and when it made it mandatory on this commission to make a rule closing the gates on Sunday, it limited the powers of the commission in this matter and we are powerless. We can't touch the matter until Congress says so, or until a court of proper jurisdiction shall declare the act of Congress inoperative. The commission is bound hide, hand and foot, and its powers in this regard are absolutely ended. No matter where or how or when the question originates, the commission is powerless to make a rule permitting the opening of the exposition gates on Sunday."

Commissioner St. Clair, who is a pronounced advocate of Sunday opening, and believes that a way will be found at an early day by which an open fair can be secured, made the following declaration:

"When the act of Congress appropriating \$2,500,000 to the fair was passed, it had in it the condition that a rule should be made providing that the gates be closed on Sunday, and that if the money were accepted the commission should make this rule. Subsequent to the passage of that act there was in the sundry civil bill the provision that more than \$500,000 of the \$2,500,000 should be withdrawn and turned over for the payment of awards. Congress therefore broke the Sunday-closing condition, as it took from the directory more than \$500,000.

"When the time comes—if it ever does come—for the question to be passed upon, I shall undertake to show that the exposition company stand to-day as they stood under the original exposition act, and that the commission has the power to pass on the question regardless of the act of Congress, as the conditions upon which the mandate was issued has been removed and the mandate is therefore inoperative.

"Under the existing rule of Sunday closing, I am frank to say, the directory hasn't any power to open the gates unless a majority of this commission assent to it, and there is no danger of any attempt being made. If it is made I will exert my efforts, in the courts if necessary, to enforce the present rule."

The commission sustained the position taken by these gentlemen, but it remains to be seen what will be done by the local directory, on whose shoulders the actual burden rests of practically conducting the affairs of the exposition. The impression prevails that in June, if not earlier, the gates will be thrown open, not to be closed on any day until the term of the exposition is ended. It is somewhat significant that the term passes which have been issued contain a coupon for every day in the week, including Sundays, for the entire period.

The Wisconsin Monolith.

The World's Fair loses an interesting exhibit, which has been announced as one of the assured features of the display to be made by Wisconsin. For some reason there was a hitch in the arrangements for the transportation of the great monolith from the brown-stone quarries, near Ashland, to the fair grounds, and Milwaukee has captured it. A committee of citizens

connection, transmits power to spur gears at either end of the pump, driving the two outside plungers and at the same time, through the single throw supporting the crank shaft, drives the center or middle plunger. The advantage claimed for this system is that the discharge is isochronous, the three plungers keeping the supply continuously steady, which must be done to obtain the highest efficiency in power pumps. When a column of water is once given a certain velocity of discharge, it is evident that any deviation from this constant velocity will result in loss of power in overcoming friction and inertia of the moving column.

The cylinders of these pumps are made with outside packed plungers. The plungers are outside, guided above, relieving them of excessive wear or strain. They have brass bushed connecting rods of forged steel, of the locomotive type, with an adjustment at either end for wear. Bronze suction and discharge valves are grouped in the valve chamber shown in

tion within the smallest limits of space, which is often a most important consideration.

Electric Transmission of Power.

Charles J. H. Woodbury of Boston chose as his subject for an address before the Lynn meeting of the New England Cotton Manufacturers' Association the subject of "Recent Developments in the Electrical Transmission of Power." After dealing with the principles involved Mr. Woodbury stated that multiphase motors will be used in transmitting the power from Sewall's Falls on the Merrimac River, about 4 miles north of Concord, for power and lighting throughout the city of Concord, and also to any establishments which may be built on the large tract of land in the vicinity owned by that company. There is a capacity of 5000 horse-power at this point, and it is expected that 3500 horse-power will be distributed during the early summer.

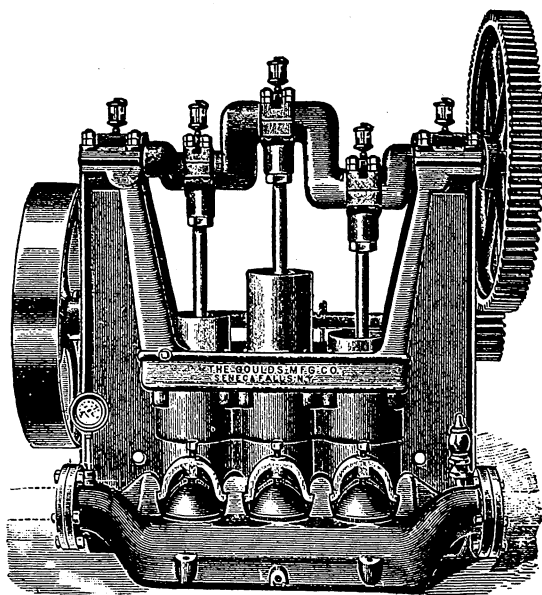
The uses of electric motors in connection with the transmission of power are becoming more widely extended, one of the best examples in this vicinity being that of the Page Belting Company at Concord, N. H., where the power is distributed throughout their extensive new establishment by means of electric motors, for which the electricity is generated in the original works of this company. George F. Page, the president, informs me that the whole cost of the electrical apparatus was 20 per cent. less than would have been required for a steam plant applied in the usual manner. There is a further economy by reason of the elimination of much of the shafting required in connection with the transmission of power from numerous motors, in comparison with the shaftings and pulleys which would have been required to distribute the power from a steam engine on the premises. The largest shafting now in these works is 2½ inches in diameter; but if an engine had been used the main shafting would necessarily have been at least 5 inches in diameter and the length of shafting many times greater than at present, the difference in this respect being greater than in cotton manufacturing, on account of the greater distance between the various machines.

In addition to safety and convenience it may be interesting to note that this method of transmission has been carried out in such a way that there is not a single open hole through the floor for any purpose, the openings for the steam pipes being packed around with asbestos. This transmission of the power from the old works is only temporary, as it is proposed to connect with the electrical power derived from the water wheels at Sewall's Falls as soon as that installation is completed.

Mr. Woodbury, in closing his address, dealt at length with the success attained at the Dunnell Print Works at Pawtucket in using electric motors to drive calico printing machines under the difficult conditions which obtain in that branch.

Spring floods of unusual height following the drenching rains in the Ohio and Upper Mississippi valleys, farming operations in one of the most productive sections of the country have been summarily halted. As far south as Arkansas many of the plantations are submerged. Fertility along the river banks is enjoyed at a heavy cost.

Depression in the Australian colonies following the Argentine troubles is expected to discourage British capital in both directions, while in the United States opportunities for profitable investment are likely to be more tempting than before.



THE GOULDS TRIPLEX PUMP.

has received the following proposition from the quarry company:

We are willing to donate to you the monolith that now lies in our quarry free of any expense to you in the condition in which it now rests. We will agree never to get out another monolith from this quarry as long as the one we have just quarried. We will furnish you this guarantee after you have furnished evidence that you have secured subscriptions sufficient for the purpose of raising the monolith from the quarry and the same sufficient to carry it to Milwaukee and place it in position in one of your parks in the City of Milwaukee.

The committee decided to accept the gift.

The Goulds Triplex Pump.

An illustration is herewith given of a triplex pump recently placed on the market by the Goulds Mfg. Company of Seneca Falls, N. Y., and supplied to the trade in the West and Northwest by Goulds & Caldwell Company, 22 and 24 North Canal street, Chicago. These pumps, of which the one illustrated is a type, are used for a great variety of purposes, such as mill and tank service, pumping through a feed water heater to the boiler, operating hydraulic feed or pulp grinders, hydraulic elevators, mines, water-works stations, &c.

The triplex pump has three single acting cylinders. The countershaft behind the pump, with the pulley for belt or other

front of the pump base, and are accessible through hand holes or ports.

The company also manufacture what they term light service triplex-power pumps with rubber-ball valves, for filling tanks, creating circulating currents, &c., intended to be used in place of heavier and more expensive patterns for a limited range of service; also direct triplex-power suction pumps, with bronze plungers and special base, in which are placed the rubber-ball suction and discharge valves on either side, the caps covering the valves being readily removed, so that the valves and seats may be easily examined and cleaned if necessary; also geared triplex-power suction pumps, designed to allow a water seal over the glands, thus avoiding the wear and pitting of plungers incident to hard-packed and tight-set glands; also, triplex-power stuff pumps, with phosphor bronze plungers and lined cylinders, for pumping paper stock, pulp, molasses, tar, beer mash, &c.; also a special type for pumping ammonia, designed to carry a pressure of 150 to 250 pounds, with the cylinder and base cast in one piece. To meet the growing use of electric power, they have also brought out patterns of special design for use with electric motors, one form of which has an extension bed plate to receive the motor, so that it forms an integral part of the pump. In the latter instance power is conveyed directly from the motor by rawhide pinions, thus bringing the combina-

The Buffalo Steel Pressure Blower.
The Buffalo Forge Company of Buffalo, N. Y., have placed on the market the

where it is then returned by means of the channels to the oil chamber. By this method a positive feed is obtained, and the oil supply being regulated by the

is that a peculiar rattling of the ring occurs when the oil is nearly consumed. This gives warning before the bearing is actually suffering from lack of oil, for it will run for quite a time after this rattling begins without injury. The oil chamber is filled after removing the plug A. By the bib cock B the oil may be readily removed from the chamber, should it become thick by continuous use or dirt.

Agricultural depression in Great Britain is felt more severely every year, not only among the farming population but among a



Fig. 1.—BUFFALO STEEL PRESSURE BLOWER.

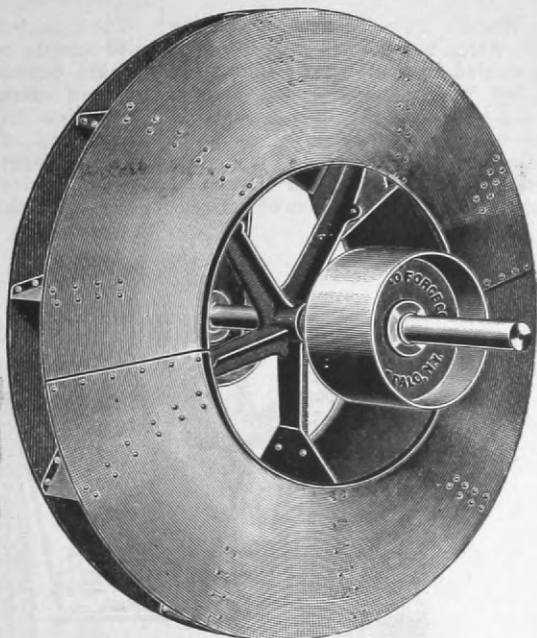


Fig. 2.—Blast Wheel.

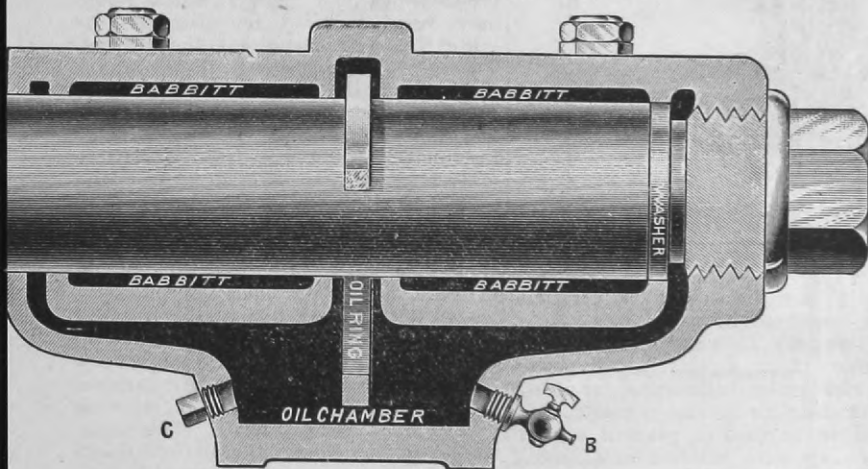


Fig. 3.—Journal Bearing Used on Buffalo Blower.

steel pressure blower here illustrated, which is designed especially for high-pressure duty, such as supplying air for cupolas, furnaces, forge fires, and for any work requiring the forcing of air for long distances. The main feature of this machine is the solid case, the peripheral portion of the shell being cast in one piece, to which the center plates are accurately fitted. The objectionable "putty" joint is thus dispensed with, and ready access to the interior of the blower without taking it entirely apart is afforded. In Fig. 2 is shown the form of blast wheel which is employed with this blower.

The journal bearing employed on this machine is illustrated in Figs. 3 and 4. It will be seen that the lower half of the bearing has an oiling chamber, through which the oil ring passes. This oil ring revolves when the shaft is in motion, and conveys the oil from the chamber to the shaft, from which it is distributed by means of chamfered edges the full length of the bearing. The surplus oil then passes to the recesses at the end of the bearing,

large class of investors. The latest report of the British Commissioners of Inland Revenue points out that the gross annual revenue of lands assessed under a certain schedule relating almost wholly to the rural districts has suffered a decrease of about \$60,000,000 during the ten years ending in 1890-91. Fifteen years ago the landlords' aggregate capital was computed at \$10,000,000,000, and that of the tenants at \$2,000,000,000. Accepting these calculations as correct, recent investigations show that the landlords' total capital is now a good deal less than \$7,000,000,000 and that of the tenants is only \$1,350,000,000.

A grand extension of the cable railway system in New York City is proposed by the Third Avenue Railroad Company. The attorney for the company says that

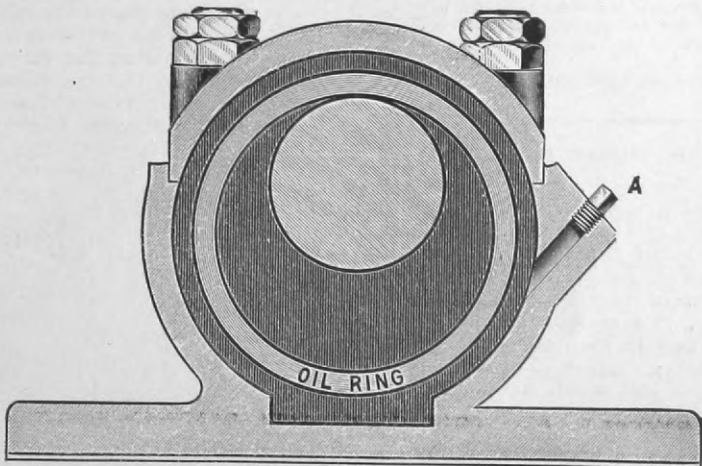


Fig. 4.—Cross Section of Journal Bearing.

speed of the shaft, it is impossible for the bearing to heat while there is oil in the chamber. Another feature of this bearing

the conversion of the horse-power system, together with extensions, will cost \$7,000,000.

The Mundy Hoisting Engines.

The engraving on this page represents a 9 x 16 inch double cylinder three-drum hoisting engine with four independent clutch winch heads, one winch head being keyed to the end of the middle drum shaft. The three drums are operated by friction clutches and the four independent winch heads by clutches and pawls. This engine is especially adapted for bridge erecting, and is now at work hoisting heavy iron and steel beams connected with the erection of the Pennsylvania railroad

pump. The latter can also be used for fire purposes as it will throw a good sized stream.

Eight lines can be operated from this engine at the same time, each one being employed for raising heavy weights. The engine is thoroughly well built, easy to manipulate, quick in operation and possesses all the strength necessary for the work it is intended to perform.

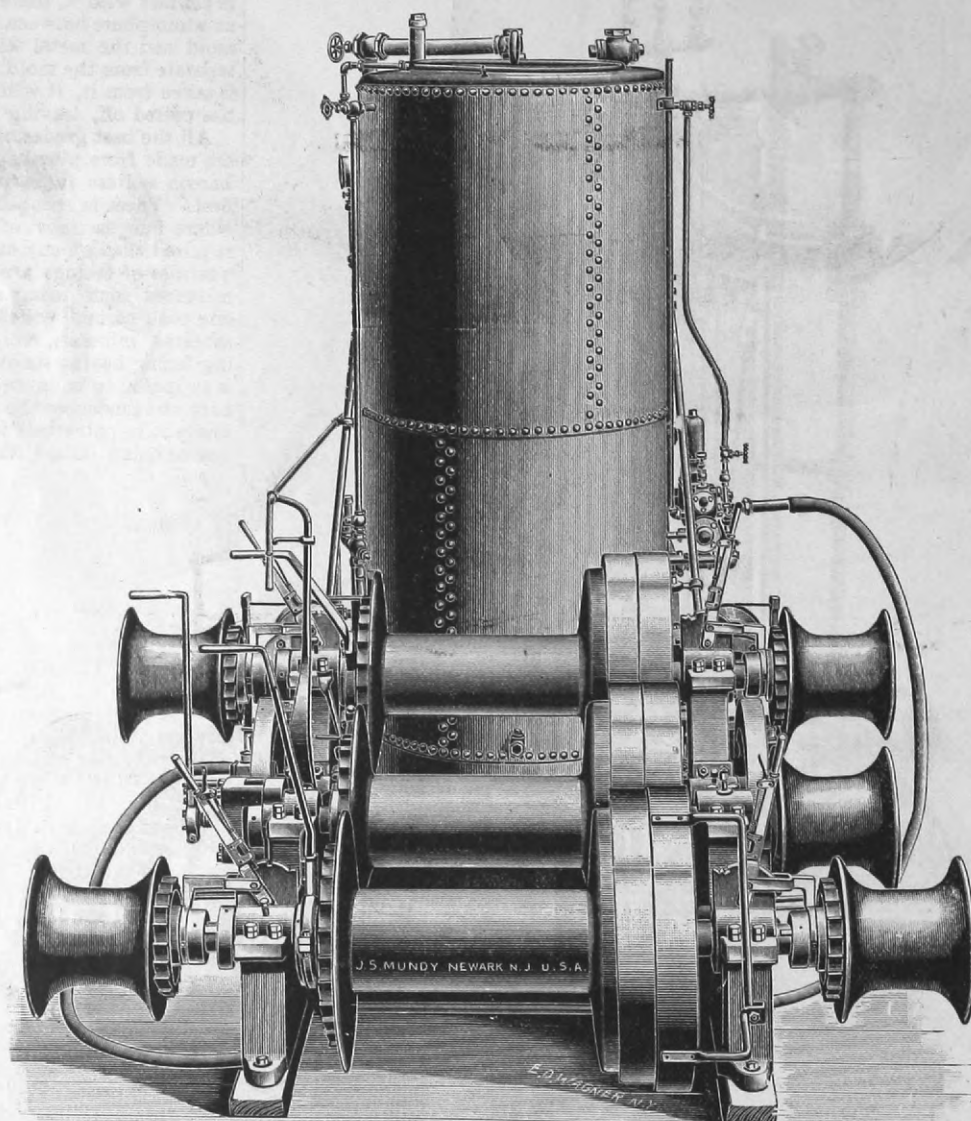
Double Cylinder Quadruple Friction Drum Hoisting Engine.

The next engraving is of a 9 x 13 inch double cylinder quadruple friction drum

and keyed with a bolt through the stub end with jamb nuts on the bottom, this construction insuring ample strength. All the cranks are counterbalanced to overcome vibration when in rapid motion. The cylinders are constructed in such a way that all parts are easily accessible.

These engines are built by J. S. Mundy of Newark, N. J., and have been employed in some of the most important engineering works, both in this country and abroad.

Advices from the East state that the Chinese land telegraphic line has at last



THE MUNDY THREE-DRUM HOISTING ENGINE.

station in Philadelphia. The center drum is operated by the regular Mundy design screw and pin connection, and the other two drums by cam levers and ball bearings, operated from the thrust end next to the pawl, this construction being, it is claimed, new in connection with friction drum hoisting engines. The clutches connected with the winch heads are so arranged with an arc lever that when the clutch is thrown in a pin drops into a slot in the arc and holds the clutch in position so that it will not work out. When the pin is raised and the clutch thrown out, the pin drops into another slot which holds it out, so that it will not work in while the engine is in motion. The boiler is fed by an injector as well as by a steam

hoisting engine, especially adapted for quarry use, as it will operate four derricks at one time with single line, or two derricks where the boom is to be raised and lowered in connection with the hoist. This engine was used for dredging out and building the piers for the drawbridge for the Lehigh Valley Railroad at Newark Bay. One pair of drums ran the dredging bucket while the other pair operated a stone derrick.

The drum shafts of this engine are made from hammered steel 5 inches in diameter and are very stiff. The four drums are operated from a platform built over them in connection with the house erected over the engine. On the large engines the straps of the connecting rods are gibbed

been joined with the Russian system. Messages may now be sent throughout the world from China by Chinese lines. Messages to Europe cost 15 per cent. less than by cable.

The elevators in Buffalo handled with out difficulty 10,000,000 bushels of grain received during the two weeks of navigation in April.

The lake carrying trade this spring is claimed to be absolutely profitless, the bottom having suddenly fallen out from the lack of both ore and coal seeking transportation. The trade is said to be more depressed than for 15 years.

FOUNDRY FACINGS.*

BY HOWARD EVANS.

The time that foundry facing was first invented and the foundry that used it first may be an important fact if we were discussing history. But, as the Foundrymen's Association is looking for information more particularly as to the using of it, we will start under the head of

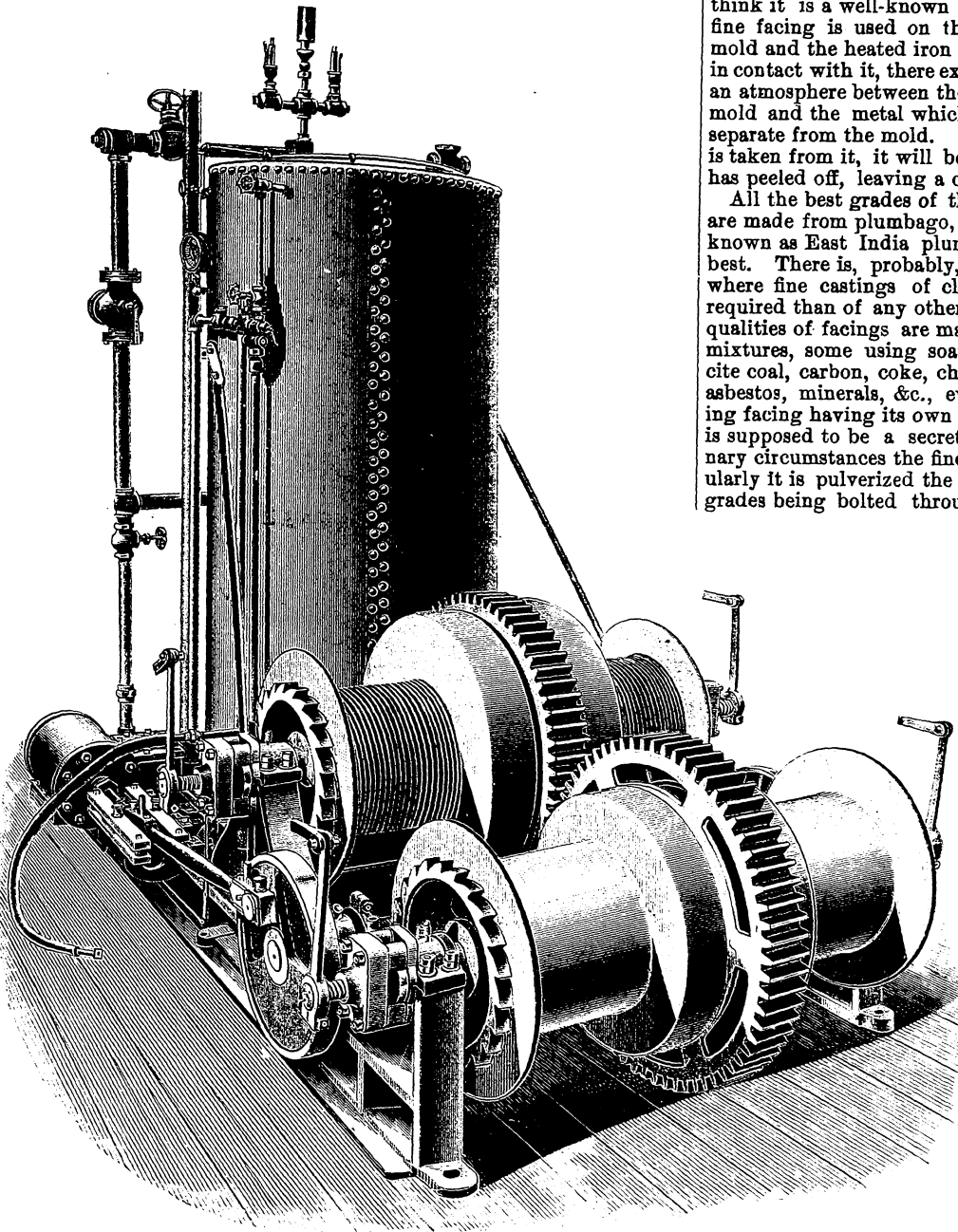
with a blue flame in the atmosphere, because of the oxygen of the air coming in contact with it and forming a gas somewhat similar to our illuminating gas, which is known as C_2H_4 , or four parts of hydrogen and four parts of carbon.

This bituminous or sea coal facing is made from soft coal, such as is used for making gas in our cities and towns. The larger the percentage of bitumen and the smaller the amount of dirt which it contains being important factors, therefore the purer it is the less it takes to perform the object to be

Fine Facings.

This is where the miller's art excels—in making the proper fine facing. It is made from various refractory materials that will stand the extreme heat in the mold, keeping it from burning into the sand. My idea as to the working of this facing may be illustrated by the following: If one drops a little water on a red-hot stove, he will notice that a bubble is formed which slides off the heated surface. There is an atmosphere of steam between the bubble and the stove. There are various theories expressed regarding the matter, but I think it is a well-known fact that when fine facing is used on the inside of the mold and the heated iron or metal comes in contact with it, there exists immediately an atmosphere between the facing on the mold and the metal which keeps the iron separate from the mold. When the sand is taken from it, it will be found that it has peeled off, leaving a clean surface.

All the best grades of these fine facings are made from plumbago, that which is known as East India plumbago being the best. There is, probably, more of it sold where fine castings of clean surface are required than of any other brand. Other qualities of facings are made from various mixtures, some using soapstone, anthracite coal, carbon, coke, charcoal, fire clay, asbestos, minerals, &c., every mill grinding facing having its own mixture, which is supposed to be a secret. Under ordinary circumstances the finer and more regularly it is pulverized the better, the best grades being bolted through a very fine



THE MUNDY DOUBLE-CYLINDER QUADRUPLE FRICTION DRUM HOISTING ENGINE.

"The reason for its use, what is expected of it, and how it is made." That which is used most is known as bituminous or sea coal, which is mixed with sand, and makes what is known as facing sand.

The object gained by this procedure is to keep the mold from bursting. The hot metal burns out the facing and turns it into a gas, which allows the heated air to penetrate the sand and pass off, leaving the mold in its original shape. This gives form to the casting.

It will be noticed that the escaping gas, after being fired by a torch, burns

gained. In large castings weighing 1 ton or over, made in green sand, it can be used to advantage if ground a little finer than mustard seed, as the escaping air must pass off quickly. In lighter work, such as small pulleys, bench work, &c., this facing should be ground very fine, so the air will escape very gradually and evenly.

As far as the quality of this kind of facing is concerned, there is not so much difference in it, as made in the various mills, as there is in what is known as fine facings. Therefore, bituminous or sea coal facing is only used to mix with the sand. The purer and the larger percentage of bitumen it contains the less amount of it is required, and the better castings it will make.

silk cloth, running about 200 meshes to the inch. In fact, the intention is to make it as nearly an impalpable powder as possible. These facings are placed upon the mold with a bag, slicked with a tool, a camel's hair brush or the hand, and the mold blown off with a bellows, so that there will be none left loose for the iron in passing over the mold to pick up and deposit in some part of the cope, where it might make an imperfect casting. Where it is necessary to return the pattern to make what is known as print work, like stove castings, &c., it is found of advantage to dust on the mold, which has been previously covered with a heavy dust, charcoal or return facings, which prevents

* An address before the Foundrymen's Association, May 3, by Howard Evans of J. W. Paxson & Co., Philadelphia, Pa.

the heavy dust of a plumbagenous nature from sticking to the pattern, as the natural dampness of the sand has a tendency to make the heavy dust of a pasty, sticky nature. The charcoal absorbs the moisture and allows the pattern to be taken out of the sand, leaving it clean, and when the metal is poured and taken out of the sand it should have a beautiful, even dark gray or bluish color, making the stove an ornament to the house which it occupies. The making of stove-plate facing is considered an art, as the different shops vie with each other and try to make cleaner castings, of a better color, than their neighbors. The castings must be thin and of a large surface, some of them being only $\frac{1}{8}$ inch in thickness. From this fact it is not necessary to use bituminous or sea coal facing, as the amount of metal used can find vent without its aid.

Another facing, which is used for cast iron water and gas pipe, known as pipe blacking, is used probably more than any other of the fine facings; the large surface to be covered and the immense number of pipes made occasion the great demand. This facing is used as a wash, being mixed with clay water to the consistency of a cream and placed upon the mold. The better grades of this facing, or blacking, are made from superior qualities of coal from the anthracite district, which are selected on account of the large amount of fixed carbon which they contain. Unless it will analyze as high as 85 per cent. of fixed carbon, and less than 10 per cent. of ash, it is not supposed to work with economy or to make clean castings. Most of the large pipe foundries employ chemists to analyze samples from each carload, that they may be sure it is up to the standard before it is allowed to be placed in the foundry. This keeps the facing man continually at work making his selection of coal of a quality that will stand the test, and while coal coming from the same mine is supposed to stand the same analysis, there is nevertheless a considerable amount of difference in the different shipments that are made. The difficulty to contend with in making black wash for making pipe is the liability of it foaming, having an appearance as though it contained a percentage of oil, as it refuses to mix with the clay water. Sometimes a barrel or bag that might be taken from a carload will be found to work in this way, although the facing man has used his best endeavors to make it regular. It is a peculiar thing that the same facing will work differently in the various shops, although they may be using the same grades of molding sand. There are certain secrets in the foundry, and while two foundries may use different secrets in the foundry, and may use different material, they make good work, each having its favorite facing.

The greatest variety of fine facings are found in the foundries making machine castings and general work. Here we find facing with all kinds of names, which leads to confusion. If one will look over the facing catalogues sent out by the different mills, he will find no less than 100 different brands, each of which is to accomplish the same results. It is this that makes it confusing to the foundrymen, and the old saying, that "there is nothing in a name," holds true in fact. It is in these foundries that the greatest variety of work is made. Sometimes very hot iron is required, while at others a slow iron can be used. For that reason a facing that might work excellently well in the shop using slow iron might be inferior in the other using hot, as the hot iron is more searching, and burns through the facing and sand. This is a very important matter and must be taken into consideration. It is necessary, as a rule, to use hot iron, as it makes a clean, sharp corner, but foundrymen must bear in mind

that a superior quality of both sand and facing should be selected to stand it.

Some years ago solid facings—that is those made from one material, such as lead, charcoal, anthracite, mineral, &c.—were used, but of late years, in order to keep pace with the times, it has been found necessary to make mixtures of different materials of a refractory nature, which are adapted to the various kinds of castings made, according to the size and shape. In other words, foundrymen cannot expect to use one facing to suit all classes of work. It is not an unusual thing to find a half-dozen different brands in shops making machine and jobbing work.

I visited a foundry a short time since where East India lead of a pure quality was being used. The foreman reported that he was obliged to turn it down, for the reason that it washed and made scalds on the castings. Upon investigation we found the molder worked upon the principle "if a little was good, more was better," and he actually had at least $\frac{1}{8}$ -inch thickness of the facing on the cope side of the mold. When I called the foreman's attention to it he directed the molder to make another mold, using the same facing in smaller quantity, being sure to have it well slicked and blown off with a bellows. After the two castings were poured, the one having too much facing on was ruined, while the other was perfect. In this case, therefore, it was not the fault of the facing, but of the molder.

As an ending to this subject, it will be well to remember that it is not always the facing that is at fault. It is sometimes the iron, sometimes the sand, sometimes the atmosphere, that causes the trouble, but I believe that, after all, the molder who uses it has more to do with the successful working of the facing, in making clean castings, than any other element.

The New Castle Steel & Tin Plate Company.

Contracts were made for iron buildings and machinery of the New Castle Steel & Tin Plate Company, at New Castle, Pa., during the latter part of April, 1892, and the excavations for foundations were begun May 18. When almost finished the large iron building was blown down by a severe storm on the night of November 17. This was at the expense of the contractors, but it caused a delay of about three months in that building. The extreme cold weather, the mercury having been down to zero for weeks at a time, caused further delay in outside work. Their year is not yet up, however, and they expect to get the plant ready for operation by the second week of July.

The main building is 250 x 110 feet, built by the Youngstown Bridge Company, with columns of the unusual height of 24 feet. In this building will be four mills and four sets of cold rolls, with room for two additional mills. These are arranged in a continuous line lengthwise of the building, as follows: Two hot mills, Corliss 30 x 60 inch engine, hot mill, two sets cold rolls, space of 10 or 12, two sets cold rolls, hot mill, Corliss 30 x 60 inch engine, and connected direct with the crank of this engine a three-high bar mill to roll the largest-sized billet that is used in tin-bar practice. The first two mills mentioned are arranged "old country style"—i. e., one is used for roughing and the other for finishing, each of the remaining ones being used for both roughing and finishing. The engines have unusually heavy fly wheels, weighing from 40 to 45 tons. On one side of this line of rolls are four double heating furnaces, while on the other side are located three sets of shears connected to a single shaft, which is driven by a small

engine. Four excellent cranes are placed almost in line with the rolls. The four boilers, 84 x 18, 108 flues each, will be placed just outside the building. The boilers and engines are furnished by the Bass Foundry & Machine Works, Fort Wayne, Ind.; the mills by the A. Garrison Foundry Company of Pittsburgh; the cranes by the Phoenix Hand & Power Crane Company of Cleveland and the castings for the furnaces by the Lloyd Booth Company of Youngstown.

Alongside the rolling mill is the wash-house, 362 x 60 feet and 24 feet high, which will contain 12 tinning stacks, with Morewood five-roll tinning machines and three annealing furnaces of the "St. Louis" plan.

A separate building, 40 x 70 feet, is provided for the machine shop, in which the rolls will be turned and general repairing, &c., done. Power for the machine shop comes from the same shaft which drives the shears in the mill.

A gas furnace for heating billets is located just outside the mill, which will be run by producer gas, and is the design of John Stevenson, superintendent of the wire nail, rod mill, and the Shenango Valley Bessemer steel plant of New Castle, and Robt. Gray, superintendent of the J. P. Witherow Works of New Castle.

A railroad will be built through the plant. The plant was built under the general direction of George Greer, the president. The remaining officers are: Charles Greer, secretary; Wm. S. Foltz, treasurer, and Harry Herbert, superintendent. The foundations and brick work, including furnaces, were built under the direction of George Hartland & Sons. The machinery, pipes, &c., were set by George W. Gageby, formerly of Johnstown, Pa. The engines and boilers were designed by Mr. Stevenson. The plans for steam and water piping were gotten up by Mr. Gray, and the fittings were supplied by Atwood & McCaffrey and Wilson & Snyder Mfg. Company of Pittsburgh. The design and plans of the rolling mill and tinning department were made by George Greer after visiting all the leading plants in the country. The works will employ from 200 to 300 men, besides boys.

The railroad facilities are excellent, four different lines having access to the plant.

The P. & L. E. (Vanderbilt system) and P. & W. (B. & O. system) enter by means of a large trestle, while the Pennsylvania lines and the W. N. Y. & P. come in from the northeast.

Pure clear water is supplied from the company's own dam on Big Run, a considerable stream that comes from the east and runs near the works.

A large brick and cement cistern, an elevated railroad water tank and three large Worthington steam pumps distribute an abundant supply of water throughout the entire plant. Within 1500 feet of the works the fine ores of the Lake Superior region are smelted into pig metal at one of the most modern and complete blast furnaces in this country and taken direct to the Shenango Valley Steel Company's plant and converted into the soft Bessemer steel suitable for all the requirements of the very finest sheets for tinning and for deep stamping. It is probable that before the mill is started the direct process of converting the pig will be in operation at the Shenango Valley plant.

It is announced that the well-known English shipbuilding works of Samuda Brothers, on the Thames, are to be brought to the hammer. The Thames has for years been declining as a shipbuilding center, the industry being now, as regards large vessels, transferred to the Clyde and Tyne. Belfast and Southampton, however, are both taking a good share of orders.

Anti-Condensation Corrugated-Iron Roofs.

It is very well known that when corrugated iron is exposed directly as a roof covering for buildings, for whatever purpose they may be employed, moisture is apt to condense on the under side during the colder months of the year, and cause no little annoyance and possible damage by the dripping in the interior of the structure. This arises from the fact that warm air holds in suspension more moisture than cold air. The warm air of the interior of the building coming in contact with the cold corrugated iron of the roof is chilled, and, as a result, deposits a portion of the moisture on the under side of the iron. When the quantity is sufficient this will drip, resulting in not only great inconvenience, but serious loss, depending, of course, upon the kind of work that is being carried on in the building. With a view to overcoming this difficulty, the Berlin

clearly indicated by the fine lettering at the right. A number of structures have recently been covered by the Berlin Iron Bridge Company with their patent roof, among the number being a dynamo room for the Elmira Illuminating Company, Elmira, N. Y.; boiler house for Cheney Bros., South Manchester, Conn.; the foundry of S. F. Hodge & Co., Detroit, Mich.; dynamo rooms for the U. S. Electric Company, at Washington, D. C., and for the Pawtucket Gas Company, at Pawtucket, R. I., as well as an engine room for the Narragansett Electric Company, at Providence, R. I.

Steam vs. Water Power.

BY SAMUEL WEBBER.

Two papers were presented to the American Society of Mechanical Engineers in 1889, one by Chas. H. Manning of Man-

other purposes for which steam is required and leaving a small balance for power. This they have a right to do, for it is well known that the additional fuel required to raise steam from 15 pounds per square inch to 100 pounds is but a small proportion, and where the steam is wanted at 15 pounds for other purposes power can be cheaply obtained. What I consider a far more reliable estimate of the cost of steam power has just been published by Chas. E. Emery of New York, in the March number of the *Transactions of the Electrical Engineers*, based on engines of 500 horse-power, which is far nearer an average size, and with which the cost of every thing except coal comes higher than with an engine of 1000 horse-power. I have been over Mr. Emery's table carefully, and find it to agree closely with my own experience as to steam, but he is misled by following Mr. Main and Professor Swain as to cost of water, for much of the expenditure to which those gentlemen refer has been an afterthought, paid for from the profits, to secure more water than was contemplated in the original outlay. All these gentlemen are late comers on the scene of action, and have not, like the writer, who went to Lowell in 1841 and Lawrence in 1847, seen the gradual development almost from the beginning. When I went to Lowell, I understood the cost of power to be \$300 per annum per "mill power," so called, of 60 horse-power approximately; \$5 per horse-power being the sum reserved as annual rental, to pay for the water, when the land and rights were sold by the Locks & Canals Company to the different manufacturing corporations. This is confirmed by the records of the Locks & Canals Company in 1823, which show the cost to enlarge the canal locks, in addition to the cost of first purchases—viz., \$18,339 for land, and \$30,217 for canal shares—to have brought the whole expenditure up to \$120,000 per 50 mill powers, or \$40 per horse-power, so that the rental of \$5 per horse-power was equal to 12½ per cent. The late Samuel Batchelder of Cambridge, who was the first agent of the Appleton Mfg. Company at Lowell in 1828 and afterward built the York Mills at Saco, and was finally treasurer of them, estimated the total cost of water power in Lowell, including interest on plant and land, to be \$15 per horse-power in a little "History of the Cotton Manufacture in New England," published by him a few years before his death. In 1845, when the original estimated water-power of Lowell was taken up, it was found that the old canals were so narrow as to cause a very considerable loss of head before the water got to the mills, which was of considerable importance to those on the "upper level" of only 14-foot fall, and to save that loss and also to catch a great deal of water which ran by for some part of the year, a new canal was built at a cost of \$530,000—far more than the whole original outlay. Then in connection with the Essex Company, at Lawrence, water rights were purchased at Lake Winnepesaukee to hold and store water there during the spring for summer use, and in this way the expenditures for water power have been gradually built up, till they reach the figures given by Professor Swain and Mr. Main, which, however, have nothing to do with the original or necessary investment. Lowell was laid out for the old wooden breast wheels on two levels, with the exception of the Merrimac Mills, and were it to be built to-day, with turbine wheels, using all the fall on one level, could be completed, with canals of sufficient dimensions, for much less than half what it has cost for power plant. The cost to the Essex Company at Lawrence was also vastly increased by a change of plan from the south to the north side of the river, making the first

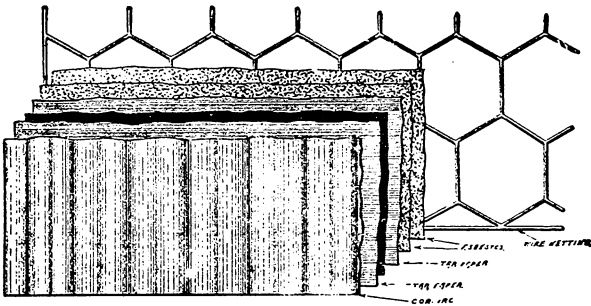


Fig. 1.—Plan View of a Portion of Roof.

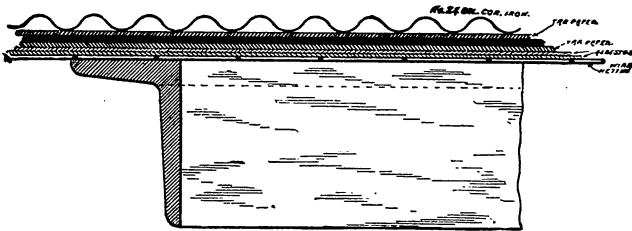


Fig. 2.—Cross Section through Roof.

ANTI-CONDENSATION CORRUGATED-IRON ROOFS.

Iron Bridge Company of East Berlin, Conn., have introduced a form of roof construction which is manufactured under patents controlled by them. Upon the purlins of the roof trusses is first tightly stretched galvanized iron wire netting. Upon this, as a foundation, are placed two layers of asbestos paper, well lapped and smoothly laid, the edges of each sheet overlapping its neighbor about three inches, while each layer protects the joints of the next layer. Above this, in turn, and laid in exactly the same manner, are two layers of tarred paper, with tar between, or asphalt or Neponset paper, as may be most convenient, put on with broken joints, smooth and flat. On top of this composition is laid the corrugated iron in the usual way. We understand that roofs put on in this manner are guaranteed not to condense moisture on the under side. These roofs, we are told, have now been in use for about five years, through different seasons, and in no case has there been any signs of condensing moisture on the under side. In Fig. 1 is shown a plan view of a portion of a roof covered as above described, while in Fig. 2 is represented a section. The different materials of which the roof is composed are

chester, N. H., and one by Chas. T. Main of Lawrence, Mass., in which they take for a basis, on the one hand, a 1000 horse-power compound steam engine, which produces steam at almost the lowest cost, and if not quite so low as it might be produced on a 2000 horse-power engine, or a 10,000 horse-power one, on an ocean steamer, far lower than the average engines in use in the United States will possibly produce it. This cost they compare with the cost of water powers at Lowell and Lawrence, where large extra expenditures have been made to enable the mills to use all the water flowing in the river at any time of the year, except for a week or two in the spring when the snow is melting, and where wheels of 19,000 horse-power have been placed in the mills at Lowell, instead of the original 9000 horse-power which the river was calculated to supply, and by adding to this the cost of land used for dwelling houses, streets, &c., they contrive to figure out a cost of water power equal to that of steam. Also, both Main and Manning have been connected with establishments using an enormous quantity of steam for dyeing, drying, &c., and where the cost of power can be made very low by charging generously to the

canal cost \$250,000, instead of \$125,000, which the second canal, built subsequently on the south side, has cost. All the water could have been used on one side of the river, but to make the land on both sides available the two canals have been cut, greatly increasing the cost per horse-power.

The gentlemen who have written on this matter have, without question, done so in perfect honesty; but, in their entire ignorance of the history of the growth of the water power, they have drawn very erroneous comparisons, and the 19,000 horse-power attainable at Lowell by their turbines should be used as a divisor instead of the 10,000 usually taken.

If they estimate the cost of steam per horse-power from a 1000 horse-power compound engine at from \$21 to \$22 per horse-power, I claim the right to estimate a water-power on 30 foot fall, with modern turbines, at a total cost, land included, of \$100 per horse-power, interest, taxes, repairs, oil and attendance, on which, all included, would bring the cost of water-power down to less than \$10 per horse-power.

I wish, however, to refer again to Mr Main's paper, which I consider a very valuable one and very correct in its estimates, if the charges for cost of land, line b, Table VI., and all the items after it, being penalty charges for surplus water, are omitted. Line a, in Table VI, I believe to represent the cost of water power fairly, and also column 24, in Table IV, that of steam; and from those two points of view a fair comparison can be made.

The head of water which can be obtained is, of course, a most important factor in this matter; and although the probable cost of dam and canal for a 30-foot fall would be more than for one of 10 feet, on the other hand the cost of wheels and feeders for the same power would be less, and it would not be far out to assume the cost of a horse-power (of water) on a 30-foot fall at one-third of what it would be on 10-foot falls.

THE WEEK.

The late Kansas Legislature may be accepted as a fair representative of the Western opponents of alleged "gold bugs." During the closing days of the session that body passed two bills, which received executive approval. The first of them, both being now the law of Kansas, prohibits any lender of money to a person in that State to contract or exact a condition that his loan shall be paid in gold; the second of them provides that any person whose property may be sold under foreclosure of mortgage shall have 18 months in which to redeem it; he during that time to remain in undisputed possession.

The tremendous floods of the last five weeks have delayed seeding and other agricultural preparations to such an extent that a "late season" will be a common complaint in many lines of business for some time to come.

The pernicious effects of holding back the wheat crop in hope of realizing higher prices are spoken of by a Toronto correspondent, who refers to the fact that the grain thus kept in warehouse can now be sold only at the lowest price in two years; that meanwhile other sources of wheat supply have improved the opportunity to sell, and that the money which might have been realized would have mitigated, if not wholly averted, the financial stringency that has already proved ruinous to many whose business was too widely extended. On the other hand, free shipments of wheat to markets already well supplied might have precipi-

tated and intensified the decline which has taken place. India effectually check-mates the United States in any scheme to squeeze consumers in Europe.

High prices for pork at the present time, such as have been rarely equaled in the last 20 years, do not result from any scarcity of corn fodder, but rather from the relative increase of pork consumers. It is shown by an array of figures that during the last eight years the number of pork eaters has increased fully 11,000,000, without any increase whatever in the number of those engaged in raising the commercial supply of swine. The result is seen in diminished relative supplies, enhanced prices and a shrinking in the volume of exports.

Cuban sugar planters, who are disappointed in the new crop, may have difficulty in paying for their improved machinery, recently ordered.

The French wheat crop this year promises so poorly that France may require unusually large imports from the United States. In 1892 we sold France 42,000,000 bushels; but her wants are variable.

Mexican railroad companies report heavy losses from the depreciation of silver. The Government treasury suffers in like manner.

Africa is at present the best market for American manufactured cotton. China, instead of being in the lead among foreign consumers, dropped this spring to the second place.

A leather trust, embracing nearly all the tanneries in the United States, is completing its organization. The sewer pipe trust is another.

Prospects for this year's peach crop in Delaware and Maryland are said to be excellent. The yield in Georgia and other parts of the South is expected to be far in advance of former years, owing to a large number of young trees bearing for the first time. The peach growing industry in Georgia is becoming of great importance, and considerable capital has been invested in the business recently.

The Mannlicher system of magazine rifle has been adopted by Austro-Hungary, Germany, Italy, Holland, Bulgaria, Roumania and Brazil. France follows the Lebel system; Belgium, Turkey and Chili the Mauser; and England the Lee-Speed system of repeating rifle.

In consequence of the depression in shipbuilding in the North of England, Hartlepool and Tees shipbuilders have given notice of a reduction of 5 per cent. in the wages of platers, helpers and laborers employed in ship yards, to take effect from May 17.

Owing to the increase of draft in the mercantile vessels recently constructed, it is found that the 26-foot channel at New Orleans is not deep enough for present requirements. A movement is on foot to increase the depth of the South Pass to 30 feet.

Kansas City, Kan., has a population of 39,500 and Topeka, the second town in the State, 33,685.

Paris is now supplied with pure water from six springs eighty miles distant, through three large reservoirs, one of which serves as a filter, so that the city is no longer dependent on the foul water of the Seine.

British trade in April decreased, both imports and exports.

The emigrants landing in New York, Boston and Philadelphia excite the envy of Brazil and Argentine, which entice them by offers of liberal premiums. The Southern States, too, hold out strong in-

ducements, especially in sections where the negroes are going to Mexico.

Odessa and Batoum are overstocked with cotton from the trans-Caspian region waiting transportation to Moscow and Lodz, and Russian spinners say they will soon be independent of America.

The defeat of the German army bill in the Reichstag is a stunning blow to militarism throughout Europe, and will exert an important influence on all material interests.

The present Australian wheat crop is estimated at 40,000,000 bushels, against 32,000,000 last year, but exports will probably not exceed fifteen millions outside of the colonies near there.

The Chinese exclusion act will not be enforced pending proceedings to test its legality.

Philadelphia papers claim that the export oil trade is being transferred from New York to that city, where oil is cheaper.

Six Mexican Governors are expected to visit New York this month and arrange for a permanent exposition of Mexican products at Industrial Hall on Lexington avenue.

How are our cherished delusions shattered by hard historical facts! It appears that the "John Bull" engine, which recently made the trip from Jersey City to the World's Fair, was neither the first locomotive run in the United States nor the first one imported from England. The *Railroad Gazette* tells us that another engine, the "Stourbridge Lion," arrived in New York from England in May, 1829, two years before "John Bull" touched these shores; while in 1830 no less than three American-built locomotives were turned out—the "Best Friend," the "West Point" and the "Tom Thumb." Probably, however, "John Bull" is the oldest engine now in existence in this country.

The rainfall in New York City during the 24 hours ending at 10 a. m., May 4, was 3.6 inches, the greatest on record at the city signal station, and 0.1 inch more than the total average rainfall during the entire month of May in the last 20 years.

A mercantile agency is authority for the statement that there are in active business in Pittsburgh 83 individuals or firms who are worth \$1,000,000 or upward.

Japan's American trade is increasing, but she buys the larger part of her cotton goods in Europe, where the coarser grades are cheaper.

Respecting monetary troubles in Australia, the London *Economist* remarks that the telegrams received are so obviously designed to disguise the gravity of the situation that they have only tended to excite distrust. A change in Australian bank practice in several respects is anticipated. The bulk of their deposits being for long terms, only a small proportion of their assets are immediately realizable.

The Canadian canals this season will have a uniform rate of 10 cents per ton, thus removing all complaints of discrimination against American shippers who transfer cargoes at Ogdensburg, N. Y.

The Cuban sugar industry is concentrating itself into a small number of large estates. In 1868 there were near Santiago de Cuba 129 sugar estates. Now the number is 17, and gradually dwindling, although the aggregate yield of sugar has not fallen off in volume in the last 25 years. The new imposts and Government regulations in Cuba are said to be likely to seriously affect the sugar industry in the island, and great dissatisfaction is felt. The cultivation of coffee and cocoa is reported to be on the increase, while that of tobacco remains stationary.

The Iron Age

New York, Thursday, May 11, 1893.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - - EDITOR.
GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - - - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

No Time to Advance Wages.

The agitation for higher wages and shorter hours of labor is a curious feature of the existing situation. Labor leaders seem to have no comprehension of the crisis through which the country is passing, but press their schemes as though every industry was enjoying the height of prosperity. The disturbances in the financial world are wholly ignored, and a deaf ear is turned to all statements of a decreasing volume of business and bad collections on standing accounts. Merchants have been complaining for several months of the slowness with which their customers have met bills, but they looked forward to the opening of spring, when relief was expected from the enlarged movement of farm products. That relief has not come, but on the contrary further discouragement intervenes in the backwardness of the season. Failure after failure has shaken confidence among capitalists, and purse strings are being tightened, which must result in more failures unless a change speedily takes place. Prices of all kinds of manufactured goods feel the effect of the financial pressure, and it looks as though the few articles now steadily held at a good price must come down with the rest. Yet, despite these untoward events, labor demands increased compensation, heedless of the fact that costs would thus be enhanced and reckless of ensuing consequences.

Every workingman knows, if he has the least glimmering of common sense, that the establishment which employs him has a much better chance for continuing in steady operation if its cost of production is lower than that of competing concerns. The concession of higher wages under pressure is often a sign of weakness, and the workmen employed in such an establishment should not congratulate one another too heartily. When the pressure for business is sharp and lower prices on goods must be made to secure trade it is only a question of time until the concerns struggling with highest costs will drop out of the contest. Employers of labor have no mysterious source from which they can obtain an illimitable supply of money to carry on their business. When a man becomes an employer of other men he does not change his condition and cease to be a man, but he borrows in the same way as other men who are not employers, and must pay his debts in the same way or he will speedily wind up his career as an employer. Labor leaders, however, act as if employers were a different order of human beings, with unlimited financial resources, making huge profits in some inexplicable fashion, but

always reluctant to divide fairly with those who work for them.

The very high wages obtaining at Chicago are being used as a lever in other localities. That city, however, is at present in an abnormal condition, owing to the magnitude of the preparations made for the World's Fair, not only inside the exposition grounds, but outside of them. Building materials and labor in the building trades have been at a premium for some time. The high wages thus paid, under the force of circumstances, have made workingmen restive in other lines. Even the waiters in hotels and restaurants have caught the infection, and demand compensation equal to that usually paid to the most skilled mechanics. This is only a temporary matter, however, and in another month the rush will be over. There will then be a surplus of labor, and the hard and fast rules of the unions, to which the members are inclined to give the credit of their high earnings, will have to be ignored in the search for employment. Chicago will surely take an early tumble from its present proud position as the workingman's paradise. The dispersion of the crowds of skilled workmen, by the completion of the fair, may then affect other localities in precisely the opposite manner. It is unfortunate for the workingman, but perhaps inevitable. In view of the troublesome times ahead, labor leaders should act conservatively and restrain their hot-headed followers rather than seek to further inflame them.

The Collapse of the Industrials.

The wail from Wall street last week might be regarded as of little account to any outside of the individuals directly concerned, were it not for the effect in unsettling mercantile credit and exciting apprehensions in business circles generally. Nor need the incidents recorded, such as the failure of half a dozen professional speculators, occasion either surprise or alarm. But the consequential damages inflicted in the manner suggested are of vital moment. Any sensible man of experience would have said in anticipation that the financial balloons, inflated far beyond the value of actual property represented, would eventually burst. Skillful financiering might keep them afloat for a long time, but shrewd bankers have been wary of so-called "industrials" when offered as collateral for loans, and for months past have either thrown them out altogether or accepted them with a wide margin for possible shrinkage.

The original design which gave them inception being to take advantage of public credulity and foist upon the market a vast amount of fictitious capital, the industrials should never have been listed on the Stock Exchange. By such laxity of procedure all manner of securities are brought into disrepute and mercantile credit impaired.

In this light the occurrences of the last week assume the importance of a public calamity, since the financial sky is clouded by uncertainty at the present time pending a solution of the silver question and other problems in finance.

In the crash of industrials fortunes have been wiped out and many worthy investors in private life find themselves impoverished. That the consequences are not more calamitous and widespread is due, as above intimated, to the prudence of bank managers who have been gathering in their resources and strengthening their position in preparation for precisely what has occurred. In the course of three months, beginning with February, our local banks contracted the item of loans and discounts about \$40,000,000, and this at a season when expansion is the ordinary rule. While Wall street has sent forth dolorous complaints of "tight money" the banks have had no lack for strictly legitimate demands, the only precaution on their part being a close scrutiny of collaterals. Even during the crash in industrial shares, borrowers on good collaterals could obtain all the money they wanted at 6 per cent. In truth, the mercantile classes can testify that, with good bills receivable to offer, the banks have been liberal in their accommodation. Hence, it follows that few institutions of good repute are liable to embarrassment from the decline in securities, so that business men may view with comparative serenity the turmoil and ruin of those who make haste to be rich by unscrupulous methods. Of course, it is not to be denied that gold exports and the consequent depletion of the Treasury may have hastened and aggravated the final catastrophe. And the further statement is warranted that the same influences will operate so long as the issue of notes payable on demand shall continue. The flood may again break over the embankment, leaving devastation in its course. One hundred and forty tons per month increase of pig silver is too big a load to be carried indefinitely.

A more far reaching and to many manufacturers a more serious effect of the collapse of the "industrials" is the influence it will have on investments in industrial undertakings generally. A large part of the public is not likely to discriminate closely between the Wall street "industrials" and those undertakings which stand on quite a different basis. Every one of the stocks which has been used as the play ball of Wall street speculation has been of the character seeking a monopoly of some manufacturing industry. But there is another class which has sought a market in our financial center which should be recognized as distinctly different from the "Wall street industrials." They are the concerns which in increasing numbers have offered to the public preferred or common stock in undertakings known to be conspicuously well managed and successful in their own particular trades.

It would be idle to deny that the happenings of last week will hamper those who have been preparing to follow the example of a number of car companies, machine builders and others. We know that concerns in the iron and hardware trades were negotiating with that end in view. These efforts are entirely legitimate. They arise from the desire of the older members of firms or close corporations to retire without a sacrifice of their interests. What associates, or individual capitalists can-

not readily do, the general investing public may undertake readily, with profit and reasonable security.

This class of "industrials," in which an interest in long-established, successful manufacturing plants is offered, must not be confounded with "cordage" or "sugar." They generally offer 7 to 8 per cent. preferred stock, or bonds which are a first lien on profits, the active management retaining the common stock and depending upon its own efforts to earn a dividend upon it. They may have suffered a setback now, but are bound to become increasingly popular later on.

The statistics for the year 1892 which James M. Swank, secretary of the American Iron and Steel Association, has just issued, emphasize some interesting points. Conspicuous among them is the growing independence of the iron trade of the fluctuations in the demand for rails. The following brief table shows this very clearly, the first column giving the product of all kinds of rolled material except rails, the second dealing with the yearly output of steel and other rails, and the third with the total product of our rolling mills:

The Production of Our Rolling Mills.

Year.	Gross tons. Rolled iron and steel exclusive of rails.	Gross tons. Rails of all kinds.	Gross tons. Total rolled product.
1887.....	3,096,068	2,139,640	5,235,708
1888.....	3,213,649	1,403,700	4,617,349
1889.....	3,714,724	1,522,204	5,236,928
1890.....	4,137,566	1,885,307	6,022,873
1891.....	4,083,787	1,307,176	5,390,963
1892.....	4,613,970	1,551,844	6,165,814

While the production of rails underwent violent fluctuations, which, of course, told also upon the total make of rolling mill products, the production of all different forms outside of rails developed almost without a break. It doubled from 1887 to 1890, and scored a tremendous increase in 1892. The change is quite well illustrated in the following table of the ratios between the production of rails and all rolled products except rails:

Ratio of Rails to Other Rolled Products.

Year.	Ratio.
1887.....	1 to 1.45
1888.....	1 to 2.29
1889.....	1 to 2.44
1890.....	1 to 2.19
1891.....	1 to 6.12
1892.....	1 to 2.91

Relatively, the rail trade has, therefore, lost its influence, although, of course, it still has a great effect upon the course of prices. The figures now available prove how true was the statement of those who urged that with a heavy rail year, involving a demand for, say, 2,000,000 tons, the year 1892, with its tremendous demand for other rolled products, would have developed as crazy a boom as we have ever had.

Statisticians are finding that the financial condition of Western farmers is better than they had supposed, and the fact is announced as a new discovery. Edward Atkinson says with regard to this subject:

The Western farmer is to a greater extent a creditor than he is a debtor, and one of the causes of the recent embarrassment of what are called "mortgage security companies" is that the farmers who owned Government lands have lately been able to borrow money at so much lower rates than those they formerly paid as to have tempted mortgage companies

to loan money on speculative investments having no connection with farm improvements of any kind.

Our readers will recall frequent references made in these columns to the improved condition among Western farmers within the past two or three years. Our hardware reports, coming from business men who are brought closely in contact with agriculturists, have been especially full of such information. Over and over again they have called attention to the increasing deposits by farmers in local banks, and the embarrassment experienced by the bankers in the loss of the farmers as borrowers. The statistics now being made up merely confirm the statements published by ourselves and other watchmen on the towers of trade. The discovery is not much of a discovery.

It is asserted by those who claim to have full knowledge of the situation that there is no contest over the price of ore between the steel makers and the mining companies. One of the largest consumers of Lake Superior ore in the country is estimated to have a three months' supply of ore on hand, at the present rate of consumption, with, perhaps, half of the company's furnace capacity lying idle. Their condition cannot be very radically different from that of other large consumers. The moderate demand for steel rails and the dullness of trade in other directions are having a greater effect on the consumption of ore than had been anticipated. Early in the year there was some reason for believing that the consumers and producers of Bessemer ores had locked horns over prices, and at that time sales might have been made if the sellers had met buyers' views. Recently, however, the situation has undergone a change. Trade in finished products is much lighter than had been expected, and certainly some large concerns do not feel like entering the ore market when they have their wants supplied so far into the future. The mines which have been shut down in the Lake Superior district have done nothing worthy of the sensational statements printed about them. It cannot be considered as a movement "to bring the steel companies to terms." They have been shut down just as manufacturing concerns are sometimes obliged to be shut down, simply because there is no immediate sale for their product.

From present indications there will be a lawsuit over the patent rights of the Talbot process for making steel. Three of the directors of the Southern Iron Company have resigned and will enter suit for the control of the patents. When the process was brought to perfection, Mr. Talbot was in the employ of the Southern Iron Company. The cost of bringing the idea to perfection and getting the patent was largely borne by J. C. Warner, A. M. Shook and Percy Warner, who were at that time directors in the Southern Iron Company. When it became apparent that the rest of the directors of the company were disposed to contest the rights of the patent, on the ground that the process should belong to them, as Mr. Talbot was in the employ of the company when he perfected his plans, the three gentlemen mentioned above resigned as directors of the Southern Iron Company. These resignations were sent in some time ago, but

no action was taken with reference to the matter until the meeting at Huntsville, Ala., last week. The Southern Iron Company claim that the Talbot process belongs to them because Mr. Talbot used their materials in making the experiments.

OBITUARY.

WILLIAM H. GREEN.

Wm. H. Green, a pioneer manufacturer of Chester, Pa., and founder of the Vulcan Works at South Chester, is dead at the age of 62 years. He had been in failing health for some time and had made arrangements to go abroad at the time of his death. Mr. Green was born in Stockport, England, and came to America when 19 years old and worked at the machine trade in Philadelphia. In 1857 he was made superintendent of the machine and engineering department of the Tredegar Iron Works, at Richmond, Va. His skill was called into use by the Government and he was assigned to the Boston Navy Yard by the Bureau of Steam Engineering. In 1861 he was made Chief Engineer, but in 1863 resigned to assume the direction of the Globe Works in Boston. Mr. Green removed to Chester in 1864, and in June established the Vulcan Works in South Chester, being a pioneer in the industrial field in that borough. He was the first burgess of South Chester, he has been a member of council, president of the school board, and always took an active interest in the town's affairs.

FRED KRONER.

Fred Kroner died at his home in La Crosse, Wis., May 4, of blood poisoning, resulting from the amputation of an injured foot. The deceased was born in Sursheim, Wurtemberg, Germany, in 1834, coming to America in 1850, and locating in Indiana. After spending a year there, he removed to Jamesville, Wis., but went to La Crosse in 1856, making that his permanent home. Mr. Kroner first worked as a blacksmith, then as a clerk in S. B. Oatman's hardware store. After acquiring a good knowledge of the business, he became partner with C. F. Scharpf, and later went into the hardware business for himself.

ROBERT C. CLARKE.

Robert C. Clarke, treasurer of the Clarke Hardware Company, died at his home in Atlanta, Ga., April 24, in the sixty-first year of his age. The deceased was born in Augusta, Ga., in 1832, and after receiving a liberal school education, he entered Princeton College, and was the valedictorian of the class of 1858. After the war he, with his brother Thomas M. Clarke, settled in Atlanta, where they became the pioneers in the hardware business. During a residence of nearly 30 years in Atlanta Mr. Clarke has borne an irreproachable character and has won the highest esteem of his fellow citizens.

From a recent report on female labor in the United States, it is found that the average proportion of women engaged in industries and professions is steadily increasing, and there appears to be a growing tendency to substitute female labor for that of men. The average age of those employed is 23 years; and it is said that the majority abandon work after they reach 30 years of age, or when they marry. The average earnings of women is about \$5 a week. The figures collected show that the effect of work upon health is by no means unfavorable to women, and comparisons made with regard to the statistics of birth, marriages and deaths show that the presence of women in industry has not decreased the number of births and marriages, nor increased the number of deaths.

Our Production of Iron and Steel.

James M. Swank, secretary of the American Iron and Steel Association, has issued his usual annual statistical volume. In some branches Mr. Swank anticipates the publication by placing before the trade at a much earlier period such data as the production of pig iron, Bessemer steel and steel rails. The following summary gives the principal figures in convenient form:

Production of Iron and Steel.		
Subjects.	1891. Gross tons.	1892. Gross tons.
Pig iron.....	8,279,870	9,157,000
Spiegeleisen, included in pig iron.....	127,766	179,131
Bar, rod, hoop, skelp and shaped iron and steel.....	3,181,548	3,661,268
Iron and steel wire rods, included above.....	536,607	627,829
Plate and sheet iron and steel, except nail plate....	678,927	711,460
Kegs.		
Iron and steel cut nails, kegs of 100 pounds.....	5,002,176	4,507,819
Iron and steel wire nails, kegs of 100 pounds.....	4,114,385	4,719,524
Gross tons.		
All rolled iron and steel, including nails and excluding rails.....	4,089,767	4,613,970
Bessemer steel rails.....	1,293,053	1,537,568
Open-hearth steel rails.....	5,883	3,619
Iron rails.....	3,240	10,437
Total rails.....	1,307,176	1,551,624
Street rails, included above.....	51,302	111,580
Bessemer steel ingots.....	3,247,417	4,168,435
Open-hearth steel ingots.....	579,753	668,889
Crucible steel ingots.....	72,586	84,709
Blister and "patented" steel.....	4,484	4,548
All kinds of crude steel.....	3,904,240	4,927,581
Ore, pig and scrap blooms for sale.....		9,104
Production of iron ore.....	14,591,178	
Imports of iron ore.....	912,856	806,555
Total consumption of iron ore.....	15,740,000	17,400,000

We quote, so far as details are concerned, the following from Mr. Swank's report:

Production of Open-Hearth Steel.—The production of open-hearth steel ingots in the United States in 1892 was 669,889 gross tons, against 579,753 tons in 1891 and 513,232 tons in 1890. There was an increase of 90,136 tons, or over 15 per cent., in 1892 as compared with 1891. The production of 1892 was much the largest yet attained in this country. The production of open-hearth steel in 1892 in New England, New York and New Jersey amounted to 88,131 gross tons; in Pennsylvania to 551,010 tons; in Ohio to 60,894 tons, and in the other Western, Pacific and Southern States to 19,914 tons. The open-hearth steel made in 1892 was produced by 63 works, located in 12 States: New Hampshire, Massachusetts, New York, New Jersey, Pennsylvania, Alabama, Ohio, Indiana, Illinois, Michigan, Missouri and California. The total number of completed open-hearth steel works in the United States at the close of 1892 was 80, or nine more than at the close of 1891. The quantity of open-hearth steel rails produced in 1892 was only 3819 gross tons, nearly all being made in California.

Production of Crucible Steel.—The production of crucible steel in the United States in 1892 amounted to 84,709 gross tons, against 72,586 tons in 1891 and 71,175 tons in 1890. There was an increase in 1892 of 12,123 gross tons over 1891, or over 16 per cent. The production of 1892 was made in 12 States: Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Maryland, Tennessee, Ohio, Indiana, Illinois, Michigan and Missouri. Of the total production of 84,709 gross tons of crucible steel in 1892 New England contributed 3003 tons; New York, 5450 tons; New Jersey, 7248 tons; Pennsylvania, 64,884 tons; the Western States, 4054 tons, and the Southern States, 120 tons.

Production of Miscellaneous Steel.—The production of steel in the United States in 1892 by various minor processes amounted to 4548 gross tons, against 4484 tons in 1891; 3793 tons in 1890 and 5120 in 1889. Blister, puddled and "patented" steel, including "patented" steel castings, are embraced in these figures. The miscellaneous steel produced in 1892 was made in Pennsylvania, Iowa and California.

Total Production of Steel.—The production of all kinds of steel in the United States in 1892 closely approximated 5,000,000 gross tons, the details being as follows: Bessemer steel, 4,168,435 tons; open-hearth steel, 669,889 tons; crucible steel, 84,709 tons; all other steel, 4548 tons; total, 4,927,581 tons, against 3,904,240 tons in 1891.

Total Production of Rolled Iron and Steel.—In the following tables we give the production of the various forms of rolled products in late years, iron and steel being added together. By the phrase "rolled iron and steel" we include all iron and steel rolled into finished forms, as follows: (1) all sizes of iron and steel rails; (2) plate and sheet iron and steel; (3) iron and steel plates for cut nails and cut spikes; (4) wire rods; (5) iron and steel structural shapes, and bar, bolt, hoop, skelp, and rolled axles. We do not include hammered axles and other forgings.

The production of all iron and steel rolled into finished forms in the United States in 1892 was 6,165,814 gross tons, against 5,390,963 tons in 1891, an increase of 774,851 tons, or over 14 per cent. Twenty-nine States rolled either iron or steel or both iron and steel in 1892. The following table gives the aggregate production by States of iron and steel rolled into all kinds of finished forms in 1891 and 1892, in gross tons:

States.	1891. Gross tons.	1892. Gross tons.
Maine.....	7,217	6,005
New Hampshire.....	4,955	5,100
Massachusetts.....	140,169	137,882
Rhode Island.....	13,203	13,328
Connecticut.....	28,434	31,574
New York.....	118,352	124,069
New Jersey.....	100,651	106,816
Pennsylvania.....	3,041,254	3,302,506
Delaware.....	36,446	37,213
Maryland.....	33,588	114,584
Virginia.....	29,245	45,616
West Virginia.....	79,207	87,955
Kentucky.....	45,215	51,282
Tennessee.....	9,229	18,016
Georgia.....	2,790	2,902
Alabama.....	36,377	33,316
Texas.....		235
Ohio.....	783,575	888,793
Indiana.....	112,129	150,596
Illinois.....	590,327	748,635
Michigan.....	29,934	43,887
Wisconsin.....	67,697	90,405
Minnesota.....	4,464	5,429
Missouri.....	24,121	30,156
Iowa.....	2,768	2,829
Colorado.....	13,138	34,079
Oregon.....		1,310
Wyoming.....	3,571	7,446
California.....	38,907	38,840
Totals.....	5,390,963	6,165,814

Pennsylvania made 53.5 per cent. of the total production of rolled iron and steel in 1892, 56.4 per cent. in 1891, 58.5 per cent. in 1890, 57.4 per cent. in 1889 and 55.7 per cent. in 1888. Ohio made 14.4 per cent. in 1892, 14.5 per cent. in 1891, 12.4 per cent. in 1890, 13.5 per cent. in 1889, and 13 per cent. in 1888; and Illinois made 12.1 per cent. in 1892, 10.9 per cent. in 1891, 12.4 per cent. in 1890 and in 1889, and 12.2 per cent. in 1888. No other State produced 3 per cent. in any year.

The total production of rolled iron and steel in the United States from 1888 to 1892 is given in detail in the following table:

Years.	Iron and steel rails.	Bars, hoops, skelp and shapes.	Wire rods.	Plates and sheets, except nail plate.	Cut nails.	Total. Gross tons.
1888.....	1,403,700	2,034,162	279,769	609,827	289,891	4,617,349
1889.....	1,582,204	2,374,968	363,851	716,496	259,409	5,236,928
1890.....	1,835,307	2,618,660	457,099	809,981	251,828	6,022,875
1891.....	1,307,176	2,644,941	536,607	678,927	223,312	5,390,963
1892.....	1,551,844	3,033,439	637,829	761,460	201,242	6,165,814

Production of Iron and Steel Rails.—The production of all kinds of rails, including light and heavy and street and mine rails, in the United States in 1892 was 1,551,844 gross tons, against 1,307,176 tons in 1891, an increase of 244,668 tons, or 18.7 per cent. The production of 1892 was composed of 1,458,732 tons of Bessemer steel rails rolled by the producers of domestic ingots; 78,856 tons of Bessemer steel rails rolled from purchased blooms and from old steel rails; 3819 tons of open-hearth steel rails, and 10,437 tons of iron rails.

Of the total production of 1,537,588 gross tons of Bessemer steel rails in 1892 Pennsylvania made 961,987 gross tons, as compared with 901,159 tons in 1891; Illinois, 450,553 tons, against 364,725 tons in 1891; and the remainder of the country, 125,048 tons, against 27,169 tons in 1891.

The rails reported to us which are definitely known to have been ordered and rolled for street railways amounted in 1892 to 111,580 gross tons, against 81,302 tons in 1891, and 98,529 tons in 1890, an increase in 1892 over 1891 of 30,278 tons. Nearly all street rails are now rolled from Bessemer steel.

The total production of all kinds of iron and steel rails in the United States from 1849 to 1892 has been as follows:

Years.	Gross tons.	Years.	Gross tons.	Years.	Gross tons.
1849...	21,712	1864...	299,437	1879...	993,993
1850...	39,380	1865...	318,118	1880...	1,305,212
1851...	45,181	1866...	384,623	1881...	1,646,518
1852...	55,784	1867...	412,596	1882...	1,507,851
1853...	78,450	1868...	452,423	1883...	1,214,905
1854...	96,443	1869...	529,988	1884...	1,022,188
1855...	123,816	1870...	553,571	1885...	976,978
1856...	160,730	1871...	692,619	1886...	1,600,537
1857...	144,670	1872...	892,857	1887...	2,159,040
1858...	140,171	1873...	794,712	1888...	1,403,700
1859...	174,513	1874...	651,262	1889...	1,522,204
1860...	183,070	1875...	707,600	1890...	1,885,307
1861...	169,480	1876...	735,383	1891...	1,307,176
1862...	190,993	1877...	682,776	1892...	1,551,844
1863...	246,221	1878...	788,112		

Production of Iron and Steel Structural Shapes.—For the first time we have this year compiled the statistics of the production of iron and steel structural shapes, and the result for 1892 is given below. These statistics embrace the production of all iron and steel structural shapes, including beams, girders, tees, channels and angles, but not including plates, which are provided for under other classifications. The production of iron and steel structural shapes in 1892 was as follows:

States.	Gross tons.
New England and New York.....	2,624
New Jersey.....	26,678
Pennsylvania.....	342,644
Alabama and Kentucky.....	10,365
Ohio.....	23,215
Indiana and Illinois.....	36,211
Michigan and Wisconsin.....	4,580
Oregon and California.....	7,640
Total.....	453,957

The magnitude of the structural branch of our iron and steel industries which is indicated by the above figures will surprise even those who are directly connected with the manufacture of structural shapes. Nearly all of the production of these shapes in 1892, as also in recent years, was of steel.

Production of Plates and Sheets.—The production of plate and sheet iron and steel in 1892, excluding nail plate, amounted to 751,460 gross tons, against 678,927

tons in 1891, an increase of 72,533 tons. Many of the plate and sheet mills of the country, especially in Eastern and Central Pennsylvania, roll skelp iron and steel of various sizes, the production of which is not included in our tables with plates and sheets, but with other rolled material.

one more than in 1891. The following table shows the production of iron and steel cut nails by States from 1887 to 1892, in kegs of 100 pounds. We have added to the table the wire-nail production for these years. New York and Nebraska have not made any cut nails since 1886 :

States.	1887.	1888.	1889.	1890.	1891.	1892.
Pennsylvania.....	2,238,165	2,072,969	1,834,899	1,825,824	1,470,013	1,521,332
Ohio.....	1,672,128	1,522,951	1,546,928	1,413,021	1,408,449	1,261,813
West Virginia.....	327,325	1,145,151	980,346	957,694	768,644	429,243
Illinois.....	275,072	241,981	204,438	130,806	97,400	128,700
Massachusetts.....	267,453	280,301	239,903	191,573	353,292	297,883
New Jersey.....	346,117	275,591	252,067	260,367		
Indiana.....	399,040	175,397	138,200	229,964	383,445	370,729
California.....	258,193	240,000	242,000	220,000	164,000	145,000
Virginia.....	250,519	245,755	194,998	202,560	107,475	96,007
Alabama.....	54,000					
Wisconsin.....	78,940	41,715	11,435	3,883		
Kentucky.....	159,720	206,783	165,000	194,654	248,854	247,107
Tennessee.....	36,473					
Colorado.....	45,725	44,997	544			
Missouri.....				5,000		
Wyoming.....						10,000
Total cut nails.....	6,908,870	6,493,591	5,870,758	5,640,946	5,002,176	4,507,819
Total wire nails.....	1,250,000	1,500,000	2,435,000	3,135,911	4,114,385	4,719,524
Grand total.....	8,158,870	7,993,591	8,245,758	8,776,857	9,116,561	9,227,343

The following table gives the production of iron and steel plates and sheets, by States, not including nail plates, in 1891 and 1892, in gross tons.

States.	1891. Gross tons.	1892. Gross tons.
New Hampshire.....	6,437	7,035
Massachusetts.....		
New York.....	9,239	12,179
New Jersey.....	489,947	515,506
Pennsylvania.....	16,548	13,206
Delaware.....		
Maryland.....	26,190	26,135
West Virginia.....	4,323	3,989
Kentucky.....	112,508	139,004
Alabama.....	6,053	16,631
Indiana.....		
Illinois.....	7,682	17,775
Michigan.....		
Wisconsin.....		
Missouri.....		
Total.....	678,927	751,460

Pennsylvania made 68.6 per cent. of the total production of the plates and sheets in 1892, against 72 per cent. in 1891, 73 per cent. in each of the years 1890, 1889 and 1888; and Ohio made 18.4 per cent. in 1892, against 16.5 per cent. in 1891, 14.9 per cent. in 1890, 14.4 per cent. in 1889, and 13.4 per cent. in 1888.

Production of Wire Rods.—The production of wire rods in 1892 amounted to 627,329 gross tons, against 536,607 tons in 1891, an increase of 91,222 tons. Nearly all wire rods are now made of steel. Pennsylvania made the largest quantity in 1892, with Ohio second, Massachusetts third and Illinois fourth in production. The other States which rolled rods last year were New York, New Jersey, Indiana and Connecticut. As the table on a preceding page shows, our production of wire rods has increased greatly in late years. We made more tons of wire rods in 1892 than we did of Bessemer steel rails in 1879, and almost two-thirds as many tons as of Bessemer steel rails in each of the years 1884 and 1885.

Production of Cut Nails.—Our statistics of the production of iron and steel cut nails and cut spikes in the United States do not embrace railroad and other spikes made from bar iron, wire nails of any size, nor machine-made horseshoe nails. Cut spikes are included with cut nails.

Our total production of cut nails in 1892 was 4,507,819 kegs of 100 pounds each, against 5,002,176 kegs in 1891, a decrease of 494,357 kegs, or almost 10 per cent. There has been a steady decline in the production of cut nails since 1886, in which year the maximum production of 8,160,973 kegs was reached. In 1892 our production of wire nails exceeded for the first time our production of cut nails.

Eleven States made cut nails in 1892,

The Wheeling cut-nail district embraces the nail mills in Ohio and Marshall counties in West Virginia and in Belmont and Jefferson counties in Ohio. There were 1,180,213 kegs of cut nails made in this district in 1892 (about one-fourth of the total production), against 1,609,933 kegs in 1891, 1,744,385 kegs in 1890, 1,825,956 kegs in 1889, 2,137,845 kegs in 1888, 1,848,116 kegs in 1887, and 1,858,551 kegs in 1886. It will be noticed that the production of cut nails in this district is declining rapidly. Large quantities of cut nails were once made in Allegheny County, Pa., but no cut nails have been made in this county since 1890, in which year only 52,536 kegs were made.

Production of Wire Nails.—The production of wire nails in the United States in 1886 was estimated at 600,000 kegs. Since that year the manufacture of wire nails of all sizes has rapidly increased. In 1887 the production was estimated at 1,250,000 kegs; in 1888 at 1,500,000 kegs; in 1889 direct reports from most of the works showed the production to be 2,435,000 kegs; in 1890 the production increased to 3,135,911 kegs; in 1891 to 4,114,385 kegs; and in 1892 it reached the large total of 4,719,524 kegs.

In the following table we give the production of wire nails in this country by districts in the last four years, in kegs of 100 pounds, as reported to us by the manufacturers:

Years.	New England.	New York and New Jersey.	Pennsylvania.	Ohio.	Indiana and Illinois.	Other States.	Total kegs.
1889.....	110,000	170,000	816,000	944,000	46,000	349,000	2,435,000
1890.....	167,135	168,460	1,061,639	1,115,320	47,507	575,850	3,135,911
1891.....	193,668	128,159	1,460,252	1,659,396	381,950	230,960	4,114,385
1892.....	107,477	91,470	1,676,624	1,800,742	796,406	246,745	4,719,524

The wire-nail production of 1892 was turned out by 39 work, and the production of 1891 by 46 works. There were 47 complete wire-nail works in the United States at the close of 1892 and several new works were in course of erection.

The "other States" referred to in the table as making wire nails in 1892 were Michigan, Missouri, California and Washington.

Production of Iron Blooms and Billets.—The quantity of iron blooms and billets produced in forges directly from the ore in 1892 was 2182 gross tons, against 5290 tons in 1891, 7094 tons in 1890 and 11,087 tons in 1889. The production of wrought iron direct from the ore in forges is now confined to the Lake Champlain district of New York and to one primitive Catalan

forge in North Carolina. The quantity of iron blooms produced in forges from pig and scrap iron in 1892, and which was for sale and not intended for the consumption of the makers, was 6922 gross tons. Of the pig and scrap blooms made in 1892 Pennsylvania produced 3726 tons, the remainder being made in New Jersey and Maryland.

Production of Allegheny County, Pa.—Allegheny County in Pennsylvania, which includes the city of Pittsburgh within its limits, is well known as the leading iron and steel producing county in the United States. It has long occupied this position. The following table gives the number of blast furnaces, rolling mills and steel works and the production in gross tons of pig iron, steel ingots and rolled iron and steel in this county in 1891 and 1892:

Details.	1891.	1892.
Blast furnaces, number....	26	26
Production of pig iron, gross tons.....	1,460,296	1,775,257
Rolling mills and steel works, number.....	63	62
Production of crucible steel ingots, gross tons.....	46,536	55,722
Production of all other kinds of steel, including Bessemer ingots, gross tons.....	1,331,073	1,550,252
Total production of steel, gross tons.....	1,377,608	1,605,974
Production of rails, bars, bolts, rods, shapes, hoops and skelp, gross tons.....	1,070,243	1,188,727
Production of sheets and plates, gross tons.....	257,498	248,369
Total production of rolled iron and steel, gross tons..	1,327,741	1,437,096

Last week the United States Court of Appeals, in session at Philadelphia, reversed the decision of Judge Atchison of the Circuit Court at Pittsburgh in the case of the Columbus Machine Company of Columbus, Ohio, against the Carroll-Porter Boiler & Tank Company of Pittsburgh. This decision is of considerable interest to manufacturers and in all probability will establish a valuable precedent. The Columbus Machine Company sold the Carroll-Porter Boiler & Tank Company a set of bending rolls warranted to bend plates up to a certain size. The price of the rolls was \$4000, and after they were set up the purchaser refused to pay for them on the ground that they were defective in material and capacity. Suit for the price of the rolls was entered and the defendants answered through their attorneys, setting up a counter claim for over \$4000 for damages

for loss of business and contracts while they were altering the rolls to meet the requirements guaranteed by the plaintiffs. When the case was heard, the presiding judge refused to permit any evidence of damages sustained by the defendants to be considered, as he held such damages were too remote to be allowed by law. A verdict of \$4200 was given against the defendants and an appeal was taken. It was argued before the court at Philadelphia, and the attorneys for the defendants held that the damages claimed by their claimants should be allowed. The opinion handed down last week sustained this claim and a new trial was ordered. It is stated that under this ruling nothing more than a nominal verdict can be obtained against the Carroll-Porter Boiler & Tank

Company, as their claim offsets that made by the defendants for the price of the machines.

The Foundrymen's Association.

The regular monthly meeting of the Foundrymen's Association was held at the Manufacturers' Club in Philadelphia, on Wednesday the 3d inst. In the absence of the president the chair was occupied by Walter Wood, of R. D. Wood & Co., Philadelphia.

The Railways and Freight committees reported progress.

The Executive Committee made a general report on the progress of the association and the benefits which had resulted from its meetings. The report instanced the valuable information derived from the addresses of Mr. James Wister, on "Coke," and intimated that addresses on other subjects of interest to foundrymen would be delivered at subsequent meetings of the association. On the subject of prices the committee referred to the present low prices of castings in open market. This state of things it considered to be brought about by bad guessing and over-production. The number of foundries had increased in greater proportions than customers for their products. The lowest ebb had probably been reached and there would be few foundrymen start in the future, the chance of gain being so limited. It could therefore only be a short time before the foundrymen would stop the production, and then when one concern had more orders to fill than capacity for filling, it was fair to suppose that future orders would be taken at higher prices. Cast iron was used as much to-day as ever, and the present price of steel castings was so low that it was only a little higher than the price of cast iron.

The treasurer reported the balance in hand to be \$365.55.

R. A. Register of Register & Sons, Baltimore; L. B. Whitney of A. Whitney & Sons, Philadelphia, and E. E. Brown of E. E. Brown & Co., Philadelphia, reported progress of their respective sections of the Price Committee.

The secretary announced with regret the decease of two members of the association—Wm. H. Green of the Vulcan Iron Works, Chester, and Edmund Grinnell of the New Bedford Iron Foundry, New Bedford, Mass. These, he stated, were the first members of the association removed by death. Mr. Green had attended nearly all the previous meetings of the association and was personally known to most of its members.

The secretary read communications from Cleveland, Ohio, Grand Rapids, Mich., and other sections, expressing appreciation of the objects and aims of the association and the interest taken by foundrymen in the West in its proceedings, and asking for information with a view to the formation of similar associations as subsidiary organizations. The correspondence evoked much discussion.

H. L. Mumford thought some scheme for centralization of the subjects and matters discussed at the meetings of this and other associations should be promoted, so as to be generally available to all interested. He believed that debates on previously arranged subjects could be conducted simultaneously at the different points.

The chairman suggested that it would be well for the other associations to send the papers they proposed to consider at their meetings to this association, that the ideas promulgated might be further discussed and disseminated. He thought great value would attach to a centralization committee which would take charge of the different branches and thus forward the extension of the work of this association. He would be glad to

have the question thoroughly discussed and a committee of sufficient size appointed to keep the movement going throughout the country.

L. B. Whitney thought that before a committee could be appointed it would be necessary to secure the co-operation of the branches, and in that way hold them closer.

The chairman was of the opinion that the subject necessitated a good deal of consideration. He thought it would be advisable for the sections proposing to form sister organizations to send some one to represent them at a future meeting. After further discussion Mr. Mumford moved that the following invitation be sent to the promoters of other associations:

1. The awakened interest in foundry matters is evidenced by the formation of numerous local societies throughout the country for the discussion of foundry practices.

2. The Foundrymen's Association, with an idea of centralizing and making more mutually available and valuable to the foundrymen of the whole country, and especially to the various organizations now formed and forming among them, the most advanced ideas of foundry practices, proposes as follows: That at the next regular meeting of the Foundrymen's Association of Philadelphia in June, 1893, its members will discuss the plan of laying out a line of topical discussion to be jointly carried on by foundrymen in their various local organizations all over the country, and regulated, perhaps, by a committee. The idea is suggested of having the discussions carried on at different places simultaneously and then embodied in a publication which shall be in a sense a nucleus and bond between the various organizations and a return of value for membership dues. That each organization be invited to contribute their views on the plan, either by letter or by personal representation at the meeting mentioned.

3. That in this way the foundrymen of the country may be virtually united in a common interest.

Your earnest co-operation is solicited.

The motion was carried unanimously.

Howard Evans of J. W. Paxson & Co., Philadelphia, then read a paper on "Foundry Facings," which we publish elsewhere.

The appreciation of the meeting was expressed in a vote of thanks to Mr. Evans, and an interesting discussion on the paper followed.

Asked by the chairman how far refractory materials like soapstone were used, Mr. Evans replied that all materials used in fine molding were of a refractory nature. Lime was used very sparingly, as it was found to affect the eyes and the pores of the skin. It was used to a certain extent by some of the country founders, but they had to abandon it eventually. It was also used to a small extent, as a mixture. Magnesia was not used to an extent greater than found in plumbago, coal or any mineral, and was not at all necessary. Asked how much ash there should be in a good facing, he stated that in facing for pipe work there should not be over 8 per cent., but 2 or 3 per cent. was about the correct quantity. Coal for making facing was bought by analysis, and vast differences in the analyses of shipments were experienced, which occasioned much trouble. Eighty per cent. fixed carbon, 8 per cent of ash, and the balance water, was the analysis usually expected.

The chairman, in speaking of pipe blackings, remarked that a peculiar circumstance noticeable in their preparation was that at times they absolutely refused to mix with the clay water or molasses, and when placed upon the mold the blacking would not adhere, and the iron picked it up and carried it along. He was told of a good plan for mixing it satisfactorily. In

pipe shops it was a usual thing to have a cask of water mixed with the clay, and to dump a full bag, or large quantity of blacking into it, and endeavor to mix it. The mixture was occasionally, after a long time, effected; and sometimes was not effected at all. The surest and quickest plan was to make a paste with a small quantity of the blacking, and lead it up from that point to the consistency of cream, by adding more water and facing. In this way a nice black wash was to be secured.

Asked whether there was any extended use of gas-house carbon in the way of facing, Mr. Evans said that it made a very good wet black for bell molds and pipe where the iron falls a long distance. It had more of a body to it than the anthracite. A number of foundries used it in the bell molds. A trouble in connection with its use was that carbon, which had been bought at \$6 or \$7 per ton from the gas works, had advanced very much in price, owing to it being used largely by electric light plants for making their pencils. It was now about \$12 per ton, with a probability of its going to \$20 during the year. The electric light plants were trying to get it all. Petroleum carbon, the residue of the oil works, was also being used, and its price had gone up from \$6 to \$8.50 per ton.

E. E. Brown stated that his firm had discontinued the use of gas house carbon, as the supply was so very irregular. They had not yet decided what they should substitute for their high heats. A more vigorous blast was a thing to use very sparingly.

The discussion then turned on the subject of high heats, with a view to having some information on it forthcoming at the next meeting of the association.

Wm. Wark of Dienelt & Eisenhardt of Philadelphia stated that he would probably bring to the next meeting a sample of fine molding, the equal of which he thought he could defy any molder in Philadelphia to produce. It was made by a Frenchman in dry sand, and probably the members present would hardly credit the fact of its being made in sand.

R. A. Register and Mr. McCarty of the Pond Machine Tool Company also took part in the discussions.

Regarding the rumor that soil pipe was being freighted from Bessemer to Baltimore at rates only 5 per cent. advance on pig-iron rates, Mr. Register stated that he had not been able to get freight bills in his possession, and that he had been informed that the railway would not answer any questions on the subject without production of a freight bill to substantiate the charges that such rates were being made.

The meeting then adjourned.

The plant of James McKinney & Son, architectural iron workers, of Albany, N. Y., is being run to its fullest capacity. The usual force is doubled, there being employed at present over 100 men. They are completing at present a revolving dome for the new Dudley observatory of Albany. This is about 30 feet in diameter. They are doing many heavy bed plates and other castings for the Osgood Dredge Company. The plant also turns out quantities of work for the Consolidated Car-Heating and Meneely Roller-Bearing companies.

Appearances now indicate that there will not be any trouble in the various building trades at Pittsburgh this year. The scales governing wages for the various kinds of labor have all been signed with the single exception of that of the stonecutters, whose annual scale does not expire until June 1. It is also expected that this scale will be arranged without any difficulty.

CANADIAN NOTES.

(By a Special Correspondent.)

This country is beginning to perceive that there is some relation between the slowness of its progress in population and wealth and the neglect of its natural iron resources. We have built railroads for the purpose of opening up regions known to be rich in ore, and we have adopted a tariff for the protection of domestic iron producers, but all the outly which this policy has necessitated has done little to build up an iron industry. There are few who derive a living, directly or indirectly, from our iron deposits. The very few furnaces that are in the country find it hard to make any money. None of them, except the charcoal furnaces of Quebec province, have been for any long time continuously in blast. Notwithstanding this, the bulk of the common bar iron used in the country is turned out by our own mills, but they make it from foreign scrap, which our accommodating Government allows to come in at \$2 per ton. The iron entering into the greater part of our machinery, domestic hardware, &c., is consequently not the product of our mines. The benefit of our very generous iron protection goes to the owners of rolling mills instead of opening mines, building up centers of industry and attracting and retaining desirable additions to population. There begins to be apparent a strong feeling against the folly of keeping this talent buried. This year there have been representations made from several sources in behalf of our uncultivated iron wealth. The Premier of Ontario, Sir Oliver Mowat, has been waited on by two influential deputations, who urged the granting of a provincial bonus of \$2 per ton on pig iron. The first of these deputations was rather composite in character, but was made up for the most part of persons more or less directly interested in the establishing of smelting works in Ontario. The other was from the Manufacturers' Association, the majority of its members being consumers of iron in some stage of its production. This deputation wanted \$1 per ton allowed for ten years. Figures were submitted to show that Canada pays about \$2,000,000 every year to foreign producers of iron, and that about \$100,000 would represent the whole amount likely to be expended in bonuses during the next ten years. The Canadian Institute, an important, scientific body, has also strongly urged that attention be given to the iron ores of the country.

The Minister of Finance has begun, in accordance with his promise last session, to sound the depths of the sentiment in favor of tariff reform. Already he has given audience to the manufacturers and importers of Montreal, and has heard the pros and cons of each group of commercial interests at that point. He was this week in Toronto, where he collected like information from the representatives of the various trades and industries carried on here. The proceedings are kept as private as possible. Of course, no one believes that conferences with the beneficiaries of our protective system are likely to furnish the Minister with strong arguments for the repeal of the tariff. Among those who submitted information to the Minister were representatives of iron consuming industries.

For about five years Toronto trusted too much in the efficacy of a real estate boom that enlivened it for a great part of that time. While that fever was on industries received indifferent encouragement, and some of them were given the cold shoulder. But that spell of pride has worn off with the passing away of the boom. Times

are dull, there are laborers standing about whom no man asks to work, and now there is a disposition to give some privileges to any well-deserving enterprise that seeks to locate here. Ashbridge's Bay, a most noxious pool, is to be reclaimed, and a smelting company, the Ontario Iron & Steel Company, proposed to establish a furnace on the new land their reclamation would add. Some important concessions were offered to the company, but they finally concluded they wanted more, and opened up negotiations with Hamilton, which are now pending. The company is reported to be a strong one, and is made up of New York capitalists, one of whom is J. J. Morehouse. Their conditions to Hamilton are as follows: The company to erect smelting works capable of turning out 200 tons of pig iron per day, the city to grant 70 acres of land, exemption from taxation, water at cost, and \$50,000 of stock to be subscribed in Canada. The company also propose to put up steel works that will employ hundreds of men and boys if Hamilton will grant a bonus of \$50,000.

The proposal reported in these notes some time ago to give a free site to a rolling mill company in the west end of Toronto, had to be abandoned on account of the strong demonstration against it on the part of the people in that quarter, who aim to preserve it as a purely residential district.

H. J. Donahue is the name of an American manufacturer who proposes to establish a wheel factory in Toronto if sufficient inducements are held out. He has been offered tax exemption if he employs 100 men.

Charles H. Horne is another capitalist from across the border who asks the privilege of a 10-acre site in Toronto for the establishing of a nickel cooking utensil factory that is to employ 200 hands.

The Ontario Rolling Mills Company, Hamilton, are talking of putting up steel works in connection with their mills.

It is reported that the Canada Iron Furnace Company of Three Rivers, Quebec, are in communication with the civic authorities of Hamilton, with an eye to opening works in that city.

The Hamilton Forge Company have the contract for the shoe and three-ton rudder of a new vessel now being built in Simpson's yard at Owen Sound. John Inglis & Son, Toronto, are putting in the machinery, and the Canadian General Electric Company will provide the lighting plant.

The damage done by fire about the middle of April to the Dominion Saw & Lead Works of the James Robertson Company, Toronto, is being repaired as rapidly as possible. The extent of the loss is estimated at \$75,000. It was covered by insurance. The fire caused no interruption to the company's business, as operations were immediately resumed in such parts of the works as were not reached by the flames, and all orders were executed with the utmost promptness. A few days afterward the company's works at Winnipeg were damaged to the extent of a few hundred dollars.

The Mica Mfg. Company, New York, have a suit pending in the Toronto courts against J. W. Patterson of the latter city, over a royalty on a machine used for the manufacture of sheathing paper for building purposes.

The Acme Silver Plating Company, Toronto, are in financial difficulties. The authorized capital of the company was \$100,000, of which \$80,000 was paid up. The Bank of Quebec is one of the chief creditors. The board of directors has

concluded to wind up the company, whose assets are expected to pay off the creditors and leave a surplus to distribute among the shareholders. The keen competition that has characterized business in plated ware is the cause of the failure.

The Mack Mfg. Company is the name of a joint stock company that is going into the manufacture of rock drills at Belleville, Ont.

A company with a capital of \$250,000 has been formed in Ottawa to buy up and work the mica land near that city.

A large number of the dealers in plate glass in this country have formed a combination to regulate the trade in that material and have applied for incorporation under the name of the Consolidated Glass Company, Limited, with a capital of \$250,000.

A failure that created considerable surprise was that of Wm. Darling & Co., metal and hardware merchants, Montreal. The firm was an old one and had the reputation of being financially strong, its credit rating by the commercial agencies being placed at \$100,000 to \$200,000. The firm have made an official abandonment of their estate, and William McMaster of the Montreal Rolling Mills Company has been named provisional guardian. The liabilities are said to be \$64,514. The Merchants' Bank is much the heaviest creditor, its claim amounting to about \$44,000.

The Standard Foundry Company, Toronto, have assigned. The failure is said to be a result of the Polson difficulty.

E. Leonard & Sons, London, Ont., manufacturers of boilers and engines, have opened an office in Toronto, with Thomas Nopper in charge. The firm are making a specialty of engines suitable for electric railways.

Authority has been granted to the Gurney Foundry Company, Toronto, to increase their capital to \$350,000.

The collapse of the National Cordage Company was followed by the issue of a notice from the Consumers' Cordage Company disclaiming any connection between the two corporations and promising payment of the usual quarterly dividend of 1½ per cent. on June 1. The Consumers' Cordage Company have just made a new issue of stock, and they are known to have bought some time ago a very large amount of their stock that was held by National people.

I. W. Bennett of I. W. Bennett & Son, Gananoque, Ont., died on the first of the month. He had been for 40 years connected with the hardware trade of that town, where his firm carried on a large business at the time of his death. Walter W. Bennett will continue the business.

The Facer Hammered Steel Car & Locomotive Wheel Company have applied for incorporation. Capital, \$600,000; location, Hamilton.

Another company of capitalists are viewing Ashbridge's Bay, Toronto, with the intention of making it the site of an iron industry if it proves suitable in their judgment and the city is sufficiently liberal. George Drummond, Thos. H. Drummond, J. Keith and Sir G. Guildford, all of Montreal, are interested.

It is reported from England that, as a result of arbitration proceedings, Sir Thomas Martineau, president of the Midland Iron and Steel Wages Board, has awarded a reduction of 2½ per cent. on puddlers' wages, as well as on those of mill and furnace men, to date back to April 3.

Increased Pig Production.

During April there was a slight increase in the production of pig iron, due to the blowing in of quite a number of larger furnaces, which has only been partially counterbalanced by the stoppage of a number of smaller stacks.

On May 1 the active furnace plant, grouped according to fuel used, possessed the following weekly capacity:

Fuel.		
Anthracite.....	67	33,168
Coke.....	146	139,788
Charcoal.....	38	8,595

Total.....	251	181,551
Total April 1.....	255	178,858

Changes.....	-4	+2,693
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The weekly product of all the furnaces on May 1 compared as follows with that of preceding periods:

	Furnaces in blast.	Capacity per week. Gross tons.
May 1, 1893.....	251	181,551
April 1.....	255	178,858
March 1.....	255	176,978
February 1.....	251	171,201
January 1.....	246	173,068
December 1, 1892.....	246	176,271
November 1.....	244	171,082
October 1.....	236	158,027
September 1.....	236	151,648
August 1.....	238	155,136
July 1.....	254	169,151
June 1.....	289	173,674
May 1.....	268	177,886
April 1.....	280	185,462
March 1.....	305	193,902
February 1.....	308	187,383
January 1.....	305	188,082
December 1, 1891.....	298	188,135
November 1.....	304	187,685
October 1.....	306	181,615
September 1.....	299	170,846
August 1.....	296	169,576
July 1.....	293	171,115
June 1.....	258	146,782
May 1.....	227	115,590
April 1.....	228	113,483
March 1.....	257	134,526
February 1.....	294	146,056
January 1.....	302	167,599

The status of the anthracite furnaces was as follows on May 1:

Anthracite Furnaces, May 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York.....	19	3	1,566	16	6,200
New Jersey.....	12	2	910	10	3,463
Spiegel.....	1	1	191	0	0
Pennsylvania:					
Lehigh Valley.....	46	22	8,813	24	8,840
Spiegel.....	1	1	70	0	0
Schuylkill Valley.....	30	13	7,521	17	7,290
U. S. Susquehanna Valley.....	16	7	3,258	9	1,585
L. S. Susquehanna Valley.....	17	8	5,197	9	2,089
Lebanon Valley.....	15	9	5,642	6	2,010
Totals.....	159	67	33,168	92	31,547

For a number of months past our records of active anthracite furnaces show the following:

	Furnaces in blast.	Capacity per week.
May 1, 1893.....	67	33,168
April 1.....	72	34,641
March 1.....	74	34,773
February 1.....	74	32,871
January 1.....	70	32,772
December 1, 1892.....	69	33,602
November 1.....	69	30,869
October 1.....	69	29,958
September 1.....	68	27,453
August 1.....	66	28,821
July 1.....	72	31,754
June 1.....	76	33,209
May 1.....	81	35,473
April 1.....	84	36,487
March 1.....	89	38,678
February 1.....	92	38,124
January 1.....	94	38,307
December 1, 1891.....	85	34,905
November 1.....	87	33,802
October 1.....	85	32,459
September 1.....	82	31,214
August 1.....	83	32,860
July 1.....	92	37,592
June 1.....	91	36,561
May 1.....	90	35,331
April 1.....	91	36,598
March 1.....	93	38,543
February 1.....	95	40,212
January 1.....	101	43,169

There has been quite a decline in the number of furnaces blowing. Cedar Point in New York, Andover in New Jersey, two Bethlehem in the Lehigh Valley and Bloom in the Susquehanna have blown out, the majority for repairs. Topton has resumed, and since the opening of the month, Crown Point in New York and one Swede in the Schuylkill Valley have again started. The falling off in the number of plants running has been partly compensated for by the unusually large product of some of the plants.

The active coke furnace capacity is represented by the following report:

Coke Furnaces, May 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York.....	7	4	5,167	3	1,300
Pennsylvania:					
Pittsburgh district.....	25	22	37,603	3	2,706
Spiegel.....	1	1	500	0	0
Shenango Valley.....	18	9	9,358	9	6,510
Juniata and Conemaugh Valley.....	18	9	6,914	9	3,710
Youghiogheny Valley.....	3	0	0	3	2,215
Miscellaneous.....	4	3	1,790	1	600
Maryland.....	5	3	4,670	2	1,850
West Virginia.....	1	0	0	1	250
Wheeling District.....	9	7	7,114	2	2,300
Ohio:					
Mahoning Valley.....	15	9	10,378	6	3,590
Central & Northern.....	11	8	6,612	3	2,220
Hocking Valley.....	12	3	1,124	9	1,600
Hanging Rock.....	15	8	1,739	7	1,926
Indiana.....	2	1	257	1	200
Illinois.....	19	9	13,365	10	15,270
Minnesota.....	1	1	665	0	0
Wisconsin.....	5	3	2,780	2	1,110
Missouri.....	6	1	675	5	2,850
Colorado.....	3	2	1,425	1	500
The South:					
Virginia.....	20	10	6,222	10	4,750
Kentucky.....	6	3	1,298	3	2,220
Alabama.....	37	23	16,594	14	6,220
Tennessee.....	13	6	3,439	7	2,950
Georgia.....	2	0	0	2	1,045
North Carolina.....	2	1	99	1	500
Totals.....	259	146	139,788	113	70,792

As compared with previous months, the active coke furnaces make the following showing:

	Furnaces in blast.	Capacity per week.
May 1, 1893.....	146	139,788
April 1.....	145	135,488
March 1.....	145	133,579
February 1.....	140	129,396
January 1.....	138	131,731
December 1, 1892.....	136	133,160
November 1.....	133	130,673
October 1.....	128	118,895
September.....	128	114,538
August 1.....	131	117,984
July 1.....	140	127,433
June 1.....	145	128,852
May 1.....	147	132,313
April 1.....	152	138,116
March 1.....	163	143,490
February 1.....	167	138,268
January 1.....	163	138,611
December 1, 1891.....	162	142,747
November 1.....	162	142,152
October 1.....	163	135,997
September 1.....	161	127,664
August 1.....	154	125,736
July 1.....	150	122,422
June 1.....	124	100,165
May 1.....	98	70,529
April 1.....	96	67,570
March 1.....	113	85,093
February 1.....	125	94,473
January 1.....	143	112,153

Although the number of furnaces has remained nearly stationary, a considerable increase in the capacity has taken place, due to the fact that a relatively large number of heavy producers have resumed. There have been started during the month Bellefonte and Rebecca in Western Pennsylvania, one of the furnaces of the Maryland Steel Company, Glasgow in the Hocking Valley, Ohio, Missouri Furnace in Missouri, Embreeville in Tennessee and Rockbridge in Virginia. There were blown out Clinton at Pittsburgh for the purpose of putting in new stoves and one Shoenberger for repairs. Jefferson in the Wheeling District is out for a similar reason and the same is true of Citico in Tennessee and Ivanhoe and Princess in Virginia.

The position of the charcoal furnaces was as follows:

Charcoal Furnaces, May 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New England.....	13	4	310	9	650
New York.....	5	1	90	4	485
Pennsylvania.....	13	3	175	10	760
Maryland.....	7	1	95	6	594
Virginia.....	13	0	0	13	827
Ohio.....	9	2	180	7	840
Kentucky.....	3	0	0	3	350
Tennessee.....	8	5	1,035	3	350
Georgia.....	3	1	235	2	320
Alabama.....	13	6	1,629	7	1,510
Michigan.....	20	9	3,001	11	2,890
Missouri.....	4	0	0	4	663
Wisconsin.....	4	3	1,260	1	200
Texas.....	4	2	310	2	410
Washington.....	1	0	0	1	100
Oregon.....	1	1	225	0	0
Totals.....	119	38	8,595	81	10,889

As compared with previous months, the record of active charcoal furnaces stands as follows:

	Furnaces in blast.	Capacity per week.
May 1, 1893.....	38	3,495
April 1.....	38	3,729
March 1.....	36	3,623
February 1.....	37	3,934
January 1.....	38	3,865
December 1, 1892.....	41	9,509
November 1.....	42	9,540
October 1.....	39	9,174
September 1.....	42	9,657
August 1.....	41	8,331
July 1.....	42	9,964
June 1.....	48	11,614
May 1.....	40	10,100
April 1.....	44	10,859
March 1.....	50	11,734
February 1.....	49	10,991
January 1.....	48	11,164
December 1, 1891.....	52	11,033
November 1.....	55	11,731
October 1.....	58	13,159
September 1.....	56	11,968
August 1.....	54	10,990
July 1.....	50	10,801
June 1.....	44	10,056
May 1.....	39	9,730
April 1.....	41	9,295
March 1.....	51	10,890
February 1.....	56	11,365
January 1.....	59	12,280

During April there were blown in one Richmond in Massachusetts, Muirkirk in Maryland, Bloom in Ohio, and one of the Southern Iron Company's furnaces in Tennessee. Production was stopped at Chat-ham in New York, Mount Vernon and Olive in Ohio, and Midland in Missouri.

Stocks.

The position of stocks, sold and unsold, as reported to us May 1, was as follows, the same furnaces being represented as in former months:

	Feb. 1.	Mar. 1.	Ap'l 1.	May 1.
	Tons.	Tons.	Tons.	Tons.
Anthracite pig.....	140,314	141,070	138,328	133,209
Coke pig.....	414,817	392,051	397,080	324,864
Charcoal pig.....	188,094	202,283	195,866	202,272
Totals.....	743,125	735,424	671,274	660,345

The figures show that the reduction in coke stocks noted last month has continued. There has also been a slight decline in anthracite stocks, while charcoal stocks, on the other hand, have increased.

William Gates, coke oven builder and contractor of Fairchance, has invented a coke oven and contrivance for drawing and loading coke into cars which he thinks will double discount the coke drawing machine at the Valley Works and reduce the labor cost of charging, leveling, drawing and loading an oven of coke to 8½ cents.

No. 1 Swede Furnace, at Swedeland, Pa., operated by R. Heckscher & Sons of Philadelphia, has blown in after being idle for two months undergoing repairs. Both stacks are now in operation.

The National Union of Finishers.

The first annual convention of the National Union of Finishers, composed of roughers, heaters, catchers and rollers who seceded from the ranks of the Amalgamated Association, was held in Youngstown, Ohio, on Saturday, the 6th inst. It is claimed there were 57 delegates present, representing 16 lodges or about 800 workmen. According to the by-laws of the organization, each lodge is allowed to send one delegate to represent each class of labor, making four in all, although it is stated some lodges sent but one representative.

The first business taken up was the consideration of the attitude of the Amalgamated Association to this new body. No proposition looking to a settlement of the differences existing between the old and the new labor bodies was received, but indirectly it was learned that when the Amalgamated Association convenes in Pittsburgh in June next a determined effort will be made to reclaim the skilled workmen who have deserted from it. In the programme as arranged by the Amalgamated Association for the June convention suggestions are made for allowing three different conference committees. One of these committees will represent the puddlers and workmen classified with them, another the sheet mill men, and the third the bar and guide and hoop and cotton tie mills. The last named committee applies to finishers, and is evidently intended to hold that class of workmen in the parent body, as it allows them to arrange their own scale, which privilege they have heretofore not had. There was no disposition on the part of the delegates in attendance at the Youngstown meeting to ask for a restoration of the 10 per cent. reduction in the finishers' wages made last year. It was the opinion of the delegates that the present condition of the iron and steel trades will allow the present scale to continue in force for another year. After considerable business had been disposed of, the question of continuing the National Union of Finishers came up, and was unanimously decided in the affirmative.

The election of officers was then proceeded with, and resulted as follows: John D. Carey of Pittsburgh, president; Charles H. Phillips of Youngstown, vice-president; P. J. Mundie of Youngstown, secretary; Joseph Dashback, Jr., of Pittsburgh, treasurer. Trustees—George W. Lamoree of New Castle, Daniel Ambrose of Youngstown, Richard Millard of Allegheny. Deputy organizer, William Dakin of Terre Haute, Ind.

A Conference Committee to represent the organization was also appointed, and it will be the duty of this committee to confer with the manufacturers regarding the arrangement of the wagescale for 1893-94. This meeting will be held just as soon as a communication is received from any manufacturer stating that such a conference is desired. Opinions differ very considerably as to what effect this move of the finishers in continuing their new organization will have upon the ranks of the Amalgamated Association. In certain quarters it is still the belief that the deserting finishers will be induced to return to the Amalgamated Association, and it is stated that liberal concessions will be made in order to secure their return.

The question of the desertion of the finishers will, no doubt, be one of the early subjects brought up for action at the Amalgamated Association convention, which will be held in Pittsburgh early in June.

The Philadelphia Natural Gas Company of Pittsburgh have declared a quarterly dividend of $1\frac{1}{2}$ per cent.

MANUFACTURING.

Iron and Steel.

By the breaking of an ore trestle in the ore yards at the Edgar Thomson Steel Works, Bessemer, Pa., on Saturday, the 6th inst., a number of workmen were precipitated to the ground and a dozen or more of them very seriously injured.

It is reported that the Youngstown Tin Plate Company recently organized at Youngstown, Ohio, for the manufacture of tin andterne plate, are considering the advisability of removing their plant to Girard, Ohio. Citizens of the latter-named place have offered the concern 2 acres of ground and a suitable bonus in order to secure the industry, and it is understood that this offer is now under consideration.

The Ohio Steel Company of Youngstown, Ohio, have placed an order this week with William Tod & Co. for their converters. The order includes the converters and all the framing and supports for them, and amounts to over 350 tons of machinery.

Girard people are forming a stock company for the purpose of consolidating the plants of the Girard Stove Works and the Wallis Foundry Company. With a capital stock of \$25,000 it is hoped to put both concerns on their feet financially.

Another department in the Falcon Tin Plate Mill of Niles, Ohio, will be put in operation this week. One set of rolls will be started turning out the black plates, which will be afterward coated. This will give a number of men employment. The balance of the mill will be started as soon as the different departments are in readiness. Arrangements are being made to inclose this plant by a high fence.

The Warren mill of the Union Iron & Steel Company of Warren, Ohio, is idle. The shut down was caused by lack of orders and high water. It is not definitely known when the fires will be lighted.

The piston rod of the engine of No. 3 bar mill, at the Brown-Bonnell Company of Youngstown, Ohio, broke Saturday morning, resulting in the cylinder head being blown out with a terrific report, which made the workmen scatter in all directions, thinking that a boiler had let go. The break down will stop work at the mill for a week.

It is stated that the Guernsey Rolling Mill of Cambridge, Ohio, will erect a sheet mill with two stands of finishing rolls, the product of which will be used exclusively in the manufacture of roofing by an identified local concern.

The Cambridge Iron & Steel Company, Cambridge, Ohio, manufacturers of iron and steel sheets, have now in course of erection a building 74 x 143 feet in size, which will be used for a galvanizing plant, in which the Bayliss process of galvanizing will be installed, which process was fully described in the columns of *The Iron Age* last year.

Every department of the Albany Iron Works, at Troy, N. Y., except the 14-inch train, is in active operation. The steel works are running on full time, as well as the Burden Iron Works.

We have already made reference in these columns to the approaching consolidation of the interests of the Standard Iron Company and the Aetna Iron & Steel Company, both of Bridgeport, Ohio. At a meeting of the incorporators of both concerns, held in Wheeling, W. Va., recently, the following Board of Directors was elected: W. H. Tallman, W. B. Simpson, Joseph Bell, B. M. Caldwell, John A. Tallman, L. Spence, L. S. Delaplaine, Alonzo Loring, J. R. Mitchell, A. P. Tallman, William Mann, J. J. Holloway and W. T. Graham. All of the new directorate were members of either the Standard Iron Company or the Aetna Iron & Steel Company, and L. Spence was a director of both concerns. The Board of Directors organized by electing the following officials: W. T. Graham, president; John A. Topping, secretary; J. J. Holloway, treasurer, and B. M. Caldwell, general manager. W. T. Graham and J. J. Holloway were respectively president and treasurer of the Standard Iron Company, while John A. Topping was secretary and treasurer of the Aetna Iron & Steel Company, and B. M. Caldwell was general manager. The two concerns are gradually completing the necessary details looking to the organization, but are still being operated as individual plants. In all probability the new offices of the consolidated company will be located in the offices of the Aetna Iron & Steel Company. No general change in other officials is contemplated at this time. When the consolidation has been effected the new concern will be known as the Aetna-Standard Iron & Steel Company.

At Pittsburgh last week, in the suit, of Joseph Matthews, a roller, against Park, Brother & Co., Limited, of the Black Diamond Steel Works, Pittsburgh, Pa., a verdict was rendered for \$6052.87 for the plaintiff. Matthews was employed by the defendants just after a strike had occurred in their mill, his salary being \$3500 per year, and claimed he had a contract for two years. At the end of six months he was discharged by the firm, and entered suit to recover wages for the entire two years. The case was tried once before and a verdict given for Matthews. The case was then taken to the Supreme Court and the judgment of the lower court was reversed. A new trial was not ordered, however, and a second suit had to be brought, which has just been concluded in favor of Matthews.

A rolling mill is reported to be projected at Muscatine, Iowa, by S. T. Williams, until recently at Muskegon, Mich.

The entire property of the Woodstock Iron Company, at Anniston, Ala., will be sold on May 25 by A. H. Shepperd, special master, to satisfy a mortgage foreclosure in favor of the State Trust Company. Among other things, the list of property mentioned includes the two charcoal furnaces and the two coke furnaces located at Anniston, and 50,000 acres of mineral and timber lands. The Woodstock Iron Company went into the hands of a receiver about six months since, and this sale is a preliminary step toward a reorganization of the company.

Mr. Salisbury, who was appointed receiver for the Lady Ensley Furnace Company, has resigned, and his successor has not yet been appointed. This action is due to the fact that some of the stockholders seriously objected to Mr. Salisbury as receiver, on the ground that he was not an experienced iron manufacturer. The Lady Ensley Furnace has closed down pending the settlement of the trouble, and it is the general opinion that the Hattie Ensley Furnace will also blow out in the course of the next week or ten days. This will throw from 150 to 200 men out of employment.

At the meeting last week of the stockholders of the Elyton Land Company, at Birmingham, Ala., a plan was proposed for the transfer of all the property of the company to the Elyton Company who were recently chartered under the laws of the State with an authorized capital of \$5,000,000. The new company propose to push the steel project to early completion. No definite action was taken with reference to the matter, but a special meeting will soon be called to settle the details of the change.

The blast furnace of the Norristown Furnace Company, at Norristown, Pa., has been blown out pending the arrival of foreign ores. The furnace had been banked for some days, but as it began to chill it was blown out.

Machinery.

During this year Reeves Brothers of Niles, Ohio, manufacturers of boilers and rolling-mill machinery of all kinds, will transfer their business to Alliance, Ohio. At that place the firm have secured 16 acres of land at the intersection of the Cleveland & Pittsburgh Railroad and Lake Erie & Northern Railroad, on which ground was broken last week for the erection of a brick building, which will measure 90 feet front and 200 feet deep, in which will be contained the boiler shops, and in which will be installed some of the finest machinery that could be secured. Included in the equipment will be a hydraulic plant for riveting and flanging. The riveter is claimed to be the largest ever built in this country, having a gap 17 feet 6 inches, and will drive rivets that distance from the edge of the plate. The flanger will take in heads 9 feet in diameter, both machines and necessary attachments being furnished by the Morgan Engineering Company of Alliance, Ohio. A set of bending rolls 30 feet distance between the housings is being made for the firm by Wickes Brothers of East Saginaw, Mich. This machine will bend a plate $\frac{1}{2}$ inch thick and the same length as the rolls, and will be provided with strong backs which will enable it to bend $1\frac{1}{4}$ -inch plates. This tool is also claimed to be the largest in America, and will be driven by a pair of horizontal engines, set on the same bed plate. The General Engineering Company of Wheeling, W. Va., are now building a special punching machine for the firm which will punch a $6\frac{1}{4}$ -inch diameter hole through a steel plate 1 inch thick and 63 inches from edge. Other machinery, consisting of a 6-foot radial drill, multiple drill, bevel shears, horizontal and vertical punches, planers, electric cranes and electric lights, will contribute toward making this new plant one of the most complete and extensive of its kind in the country, and peculiarly adapted to do the lightest and also the heaviest work. The firm will also commence the erection at an early

date of a tank and gas-holder shop which will measure 70 x 200 feet.

The Fitzgibbons boiler shop, at Oswego, N. Y., is progressing. The machinery for the plant is nearly all on the ground.

Some time ago Daniel Ashworth, steam expert and consulting engineer, of Pittsburgh, was engaged by the Pittsburgh Brass Company, Allegheny, Pa., to install the motive power and transmission at their works in that city. This plant is now in operation and the entire works are furnished with steam by a pair of tubular boilers. The motive power is furnished by a Lane & Bodley Corliss engine, transmitting its power by means of the Dodge system of rope driving to each floor, of which there are four, so that any one of them can be connected or disconnected at any moment without stopping or interfering with other departments. The foundry, located just beside the main building, is driven in the same manner. Tests recently made by Mr. Ashworth show excellent ease of operation.

Rapid progress is being made on the new foundry now being erected at the Edgar Thomson Steel Works at Bessemer, Pa. The steel structural work of the casting house is completed and the brick work has been started. It is expected the new foundry will be ready for operations about July 1 next.

The Cartright Hydraulic Machinery Company, J. E. Hamilton resident manager, now have their Chicago office at 415 Rookery Building.

The Rudolphi & Krummel Machine Works, 96 to 100 North Clinton street, Chicago, are paying special attention to the manufacture of machinery to be used in the construction of bicycles. They have brought out a new device for stretching or jacking bicycle chains, which has been built upon the suggestion of a leading Chicago bicycle manufacturer. They are confident that it will be found a necessary tool in shops in which high-grade wheels are made. The machine is adapted to the use of chains of various lengths and is described as simple and easily handled. The firm have also brought out a twin rim drilling machine for drilling and counterboring the nipple or spoke holes of bicycle wheel rims. It will take in wheels 24 to 32 inches in diameter. It is designed to save time as well as to turn out accurate work.

The Campbell Mfg. Company, with a capital of \$15,000, have been chartered at Newport, Ky., by Edward W. Mullikin, J. R. Clarke and others, to manufacture cotton compresses and other machinery.

At the regular meeting of the stockholders of the Southern Iron Company, at Huntsville, Ala., last week, John P. White, G. M. Fogg, I. T. Rhea, T. W. Wrenne, R. Ewing, John P. Williams, John H. Inman, T. M. Stegar, Hiram Stubblefield, L. T. Baxter and N. Baxter, Jr., of Nashville, Tenn.; H. S. Chamberlain of Chattanooga, and R. C. Pullen of Huntsville, Ala., were elected directors. Of the above Messrs. Stegar, Pullen and Stubblefield are new, being elected to fill the vacancies created by the resignation of J. C. Warner, A. M. Shook and Percy Warner. The directors will elect officers probably next week.

Whitlock Coil Pipe Company, Elmwood, Conn., makers of the American feed-water heater, report recent shipments as follows: One 100 horse-power to Marlboro, Mass., Electric Light Company; one 90 horse-power to Harborsburg Foundry & Machine Company, and one 600 horse-power to Edison Electric Light Company, New Orleans. These heaters have been in the market a little over a year and received the highest award at the last Mechanics' Fair at Boston.

Union Mfg. Company, New Britain, Conn., manufacturers of the Union drill chuck, will erect an addition to their foundry 70 x 42 feet, to be commenced at once. A new chuck catalogue will be issued by this concern about June 1. Business with them is reported as active.

The Belden Machine Company of New Haven, Conn., advise us that owing to the increase in their Western business in the power hammer line, they have opened an office at 65 South Canal street, Chicago, under the management of H. O. Skinner. A full stock of the various sizes of tools made by the company will be kept on hand.

The capital stock of the Danville Foundry & Machine Company, Danville, Ill., has been increased from \$25,000 to \$40,000.

The new works of the Bushnell Mfg. Company, at Easton, Pa., are nearly completed, and operations will soon be transferred from Poughkeepsie to that place.

The Bridgeton Iron Works, at North Bridgeton, N. J., have been destroyed by fire. The loss is placed at \$25,000, while the insurance was \$12,000. The works were rushed with orders, and the foundation had already been laid for an extension.

The American Balance Slide Valve Company have been incorporated at San Francisco, with a capital stock of \$50,000. The company control patents on slide valves for which great claims are made.

The machine shop of A. White & Son, at Charlottetown, New Brunswick., has been burned.

Gilmour Brothers, who have carried on a foundry business at Greenville, Conn., for the past 27 years, have retired from business.

Brown & Sharpe Mfg. Company of Providence, R. I., have contracted with Norcross Brothers of Worcester, Mass., for a new four-story fire-proof brick building, known as the works as No. 1 Building Extension of 1893. It is 163 feet long, 51 feet wide, with two wings, 57 and 84 feet. The walls are 20 inches thick, with a 28 x 4 inch pilaster every 8 feet, and in each of the pilasters are two flues for use in the heating and ventilating system. The floors and roof are made of steel beams and brick arches. The beams do not rest on the walls, but are supported by metal framing, consisting of steel Z-bar columns on the centers of the pilasters, a 15-inch 32-pound channel iron between these and the cast-iron columns, and a 20-inch 100-pound steel girder in the center of the building. The floor beams are 15 inches, 80 pounds, the figures being for the framing for the second floor, which will support a safe load of 400 pounds. The safe load for the upper floors is 250 pounds per square foot. The cast-iron columns on the first floor are 16 inches diameter, 2 inches thick, 17 feet high under the beams and 16 feet apart. Between the beams of the other floors the height is 13 feet 6 inches. The roof beams are inclined so that the water runs to the center and is taken through the cast-iron columns. The roof is made of hollow, porous terra-cotta tiles, cemented on top and finished with five-ply tar and gravel roofing. The lower floor is underlaid with concrete, and all the floors consist of a layer of 3-inch spruce, a second of 1½-inch spruce laid diagonally with the first, and a top layer of 1½-inch hard pine laid parallel with the 3-inch spruce. Five-eighths of the wall space is taken up with windows. The first floor is nearly on a level with the ground, and is connected with the first floor of the present No. 1 Building through the western wing (at the east there is a driveway), and the second and third floors are on a level and connect, through the wings, with the floors in the present building. The stairways are iron and are inclosed on the outside of the building proper. The boiler stack is 125 feet high, and the heating apparatus will be placed in the extension of the basement of the central wing of the present No. 1 Building. The building will be used for the manufacture of machine tools, and the total floor space will be about 50,000 square feet.

The Stark Machine & Tool Company, manufacturers of tinner's machines and tools, presses and dies, &c., of Buffalo, N. Y., are building two back-gear, single-action power presses, weighing about 15 tons each; and in addition to this they have taken contracts for two of their 11-foot combined foot and power shears, cutting No. 20 stock by foot and No. 14 by steam power.

Miscellaneous.

At the annual meeting of the stockholders of the Philadelphia Natural Gas Company, held at Pittsburgh, last week the following directors were elected: A. M. Byers, Robert Pitcairn, John Caldwell, A. Groetzinger, J. R. McGinley, Calvin Wells, H. Sellers McKee and E. M. Ferguson. The only change made was the substitution of J. R. McGinley for Mr. Denniston, who heretofore represented the Carnegie interests on the board.

The statement of the Chartiers Valley Natural Gas Company of Pittsburgh for the quarter ending March 31, 1893, compared with the same quarter of last year is as follows:

	1893.	1892.
Gross receipts.....	\$87,592.09	101,351.15
Net receipts.....	78,042.25	88,632.72

At Pittsburgh last week Samuel Lewis filed his first account as receiver of the Dexter Spring Company of Hulton, Pa. It shows that from November 1, 1891, to April 1, 1893, he collected \$70,553.37 and paid out \$55,553.37. Included in the last amount is \$1916.82 retained by the receiver to carry on the business. The amount for distribution among the creditors is \$15,000.

Oliver Brothers of Lockport, N. Y., have commenced the manufacture of brass and iron bedsteads. The plant is running very successfully and there will be large output.

The Baackes Wire Nail Company of Cleveland, Ohio, have mortgaged their plant, consisting of 18½ acres, the buildings and improvements, to the Savings & Trust Company for \$250,000. The mortgage secures 250 negotiable bonds of \$1000 each dated May 1, 1893, maturing in ten years.

Superintendent Charles F. Winkler of the United Columbian Electric Company of Kingston, N. Y., is busily engaged in placing the machinery in the plant to be operated by the concern. A new foundry will be erected for them. Mr. Winkler, who is the inventor of the motor which will be manufactured, says that there is so much work ahead that it has been necessary to have some of it done in outside foundries.

After negotiations lasting some time, the Morgan Spring Company of Worcester, Mass., have secured a tract of 11½ acres at Barber's Crossing, on the line of the Worcester and Nashua division of the Boston & Maine Railroad, and plans have been perfected for the new plant which the company propose to erect there. Two buildings are to be erected at once, both of them two stories high, the first 100 x 150 feet, and the second 60 x 144 feet in dimensions. Other smaller buildings will also be erected and the work of grading will be commenced within a few days. The Morgan Spring Company will move into the new buildings as soon as they are completed, which is thought to be about the last of September or October 1. The Morgan Construction Company will occupy the building on Lincoln street, which is now occupied by both companies. This is the plan at present, but the other company may move to Barber's also, in which event additional buildings will be erected. The Boston & Maine Railroad is to run a siding from the present tracks at Barber's, thus affording the company good shipping facilities. The new buildings will be put up by the Morgan Construction Company, who have already prepared the plans. The Morgan Spring Company were organized as a stock company about ten years ago, with a capital stock of \$10,000. Since then the capital stock has been increased to \$30,000. The stockholders are C. H. Morgan, president; F. H. Morgan, treasurer; George H. Scott, Frederick McFadden and Paul B. Morgan.

The Forsyth Scale Company, Youngstown, Ohio, manufacturers of rolling mill, portable and counter scales, have just completed the erection of a 15-ton suspension scale in the new plant now being built by the Ohio Steel Company, at Youngstown. This scale is claimed to be very peculiar in construction, the design being original with the Forsyth Scale Company. It consists of four main levers gathered to a center and there connected with a fifth lever extending to and connecting with the beam of the scale, the platform being held in place by eight casters at the four corners, which does away with check chains, and reduces the friction to the lowest possible limit. The Forsyth Scale Company advise us that they make all sizes of this particular kind of scale.

The Wrought Iron Bridge Company, Canton, Ohio, manufacturers of iron and steel bridges, have just commenced the erection of a bridge of three spans of 209 feet each for the Wheeling & Belmont Bridge Company, which will require about 800 tons of structural material. The same firm are building the roof for the pumping house station at Savannah, Ga., and have in the course of erection 38 bridges in Maine for the Maine & Aroostock Railroad. They have just completed the building at the World's Fair for the exhibit of the Libbey Glass Company, and the roof for the boiler house and car shops of the Fort Wayne & Belle Isle Street Railroad Company, Detroit, Mich. The Wrought Iron Bridge Company are going more extensively into the erection of buildings, in addition to bridge work. The equipment in the new plant of this concern, consisting of machines, punchers, riveters, cranes, drills, &c., is all run by electric power.

Among recently authorized corporations in Illinois are the following: Coleman White Lead Company, Chicago; capital stock, \$1,000,000; for the manufacture of white and red lead; incorporators, George D. Coleman, H. R. Pebbles and Colin C. H. Tyffe. John Mohr & Sons, Chicago; capital stock, \$100,000; for the manufacture of steam boilers, &c.; incorporators, John Mohr, Joseph Mohr and Louis Mohr. The Standard Screw Elevator Mfg. Company, Chicago; capital stock, \$1,000,000; incorporators, Nelson Hiss, C. L. Wallis and Charles L. Haines. The D'Unger Electrical Telephone Mfg. Company, Chicago; capital stock, \$100,000; incorporators, J. F. Greene, W. D. Johnston and H. S. Folger.

Plans have been completed for the new shops which the Southern Pacific Railroad Company will establish at Ogden, Utah, and the company are advertising for bids for their construction. The buildings to be erected are three in number, and consist of a roundhouse 450 x 200 feet, to contain 23 stalls; an office and storeroom 33 x 120 feet, and a machine shop 235 x 94 feet.

The Grand Rapids Brass Company of Grand Rapids, Mich., will shortly extend their facilities by the erection of a new structure 60 x 100 feet, three stories high.

TRADE REPORT

The most conspicuous and by far the most influential point affecting the whole market is the tight money in all industrial centers and the feeling of distrust as to the financial standing of customers. While the East has gotten over the worst of its fright, the West has been rudely awakened from its feeling of security.

The effect is only too apparent in all markets for nearly all lines, in very conservative, hand-to-mouth buying and in the occasional appearance of urgent sellers who must turn product into money in order to meet maturing obligations. Exceptional transactions promise to become only too numerous in the near future.

The horizon is beginning to darken with the cloud which the annual wages settlement in the West brings with it. If the logic of events had its effect upon the men a prompt settlement might be expected. But history has shown that reason is not always triumphant among the men.

The Norrie, the leading Gogebic mine, has sold about 500,000 tons of Ore at \$3.75, Cleveland, 400,000 tons thereof being taken by a leading Pittsburgh interest. This price nets the mine more than former offers on account of the decline in lake freights. Negotiations with other large consumers are pending.

It is estimated that with standard Ore at that price and a chance to cheapen mixtures with some off-grade Ore, and with Connellsville Coke at \$1.60 at oven, Bessemer Pig can be made in the Valleys and in the Pittsburgh district lower than ever before.

The whole territory which draws its supplies from Lake Superior and from Connellsville is therefore in an exceptionally favorable position so far as cheap raw material is concerned, a fact which Eastern and Southern competitors may learn to feel keenly during the current year.

Bessemer Pig is easier in Pittsburgh, having receded to \$13.25. It has come to the surface also that quite considerable blocks have been sold from the Valleys for the second half of the year.

Billets are weaker East and West. In the East a leading company is reported to be offering at low prices provided quick payment is made. In the West the suspension of the Premier Steel Company has led to the canceling of some contracts. Sales have been made in the Pittsburgh-Wheeling district as low as \$21.25, future delivery. Wire Rods are weaker in sympathy and are freely offered at \$30 at mill. Barb Wire and Wire Nails are also feeling the decline.

Nearly all the leading lines in Manufactured Iron and Steel are dull and are inclined to weakness. The event of the week is the opening of bids for the contract for the Park avenue improvement, details of which are given in our New York report. Elmira was the lowest on three sections and Trenton on the fourth.

All the principal metals are easier, and some show a distinct decline. The Spelter consolidation has been abandoned in St. Louis, the result being that supplies which have been held back in the hope that something might come of the movement are now pressed for sale.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, May 10, 1898.

The West is now feeling the effect of the depression in trade and the severe stringency in the money market. Unexpected failures of important Western manufacturing establishments and large financial institutions have shaken faith in the ability of the West to pass through the ordeal unscathed. This has for some time been a pleasant theme among those believing themselves to be well posted. They now learn their mistake. The West is obliged to participate with the East in the general demoralization of financial matters. First-class paper is anxiously seeking accommodation at a sharp discount. There is a general lack of confidence and uneasiness pervades the entire community.

Pig Iron.—The molders' strike continues, and is having a bad effect on business here. Local Coke Iron shows no new developments. Some business is being done, but not of any magnitude. A little better trade is noted in Southern Coke, but contracts are not large; none exceeding 500 tons have transpired. Some Southern sellers are maintaining prices very firmly, claiming to be well sold up, but others, especially new furnaces recently started, are soliciting business eagerly and making the usual inducements to secure trial orders. Lake Superior Charcoal maintains its strength on current transactions, which are confined to small quantities. Buyers are still holding off, for they have been unsuccessful so far in their efforts to depress prices. This is shown by the steady receipt of small orders from consumers who have asserted that they had lower offers elsewhere. The recent failures are making sellers apprehensive, and they are now more disposed to cultivate the small trade than the favors of large consumers, in order to divide the responsibility over a greater area.

Lake Superior Charcoal.....	\$16.50 @	\$17.00
Local Coke Foundry, No. 1.....	13.75 @	14.25
Local Coke Foundry, No. 2.....	13.00 @	13.25
Local Coke Foundry, No. 3.....	12.75 @	13.00
Local Scotch.....	14.00 @	15.00
Ohio Strong Softeners.....	16.00 @	16.50
Southern Silvery, No. 1.....	@	15.00
Southern Silvery, No. 2.....	@	14.50
Southern Coke, No. 2.....	13.00 @	13.35
Southern Coke, No. 3.....	12.60 @	12.75
Southern, No. 1, Soft.....	13.00 @	13.35
Southern, No. 2, Soft.....	12.50 @	12.75
Southern Gray Forge.....	11.85 @	12.25
Tennessee Charcoal, No. 1.....	16.50 @	17.50
Alabama Car Wheel.....	@	18.85
Coke Bessemer.....	14.50 @	15.00
Hooking Valley, No. 1.....	16.75 @	17.00
Jackson County Silvery.....	16.75 @	17.00

Bars.—The past week has been comparatively quiet. Some quantities called for are not only of good size, but the specifications are very favorable, yet business is not of sufficient volume to go around, and competition is keen. Prices are, therefore, not satisfactory to leading sellers, who continue their quotations of 1.50¢ @ 1.53¢, Chicago, but are disturbed by the assertion from buyers that lower offers are being made by the small mills. The standard mills who have a good reputation for their product are, therefore, not receiving much business at present, owing to the attitude of their customers, who seem determined to force prices down. Implement manufacturers are feeling the market, but are not in a hurry to close. Soft Steel Bars are selling fairly well at 1.63¢ @ 1.70¢, Chicago. Jobbers report a moderate business from stock at old quotations of 1.70¢ @ 1.80¢ for Iron and 1.75¢ @ 1.85¢ for Soft Steel.

Structural Material.—Business has been rather light of late, but a great deal of work is in sight in the West, outside of this city. Local building projects are rather numerous, but attempts are now being made to float securities, which con-

tractors are unwilling to accept in part payment. The Northwestern Railroad will shortly give out some important contracts for new bridges, but it is not yet known whether they will be Iron or Steel. Beams are quoted here at 1.85¢ @ 2.10¢, according to quantity; Angles and Universal Plates, 1.85¢ @ 1.90¢, on mill shipments; Tees, 1.95¢ @ 2.05¢.

Plates.—Trade continues quiet, but this is usually the dull season in the Plate line and not much business is expected. Even store trade has fallen off considerably. Quotations on mill shipments, Chicago delivery, are as follows: Tank Steel, 1.80¢ @ 1.90¢; Shell Steel, 2.05¢ @ 2.15¢; Flange Steel, 2.20¢ @ 2.30¢; High Grade Fire Box, 3.87½¢. Store prices are as follows: Nos. 10 to 14 Iron or Steel Sheets, 2.35¢ @ 2.60¢; Tank Steel, 2.20¢ @ 2.40¢; Shell, 2.35¢ @ 2.50¢; Flange Steel, 2.60¢ @ 2.80¢; Boiler Tubes, 67½¢ @ 70¢.

Sheets.—Inquiries on Black Sheets have been a little better the past week, showing that some belated consumers are in the market. The Joliet Sheet mill starts up again this week, making a specialty of Light Sheets. Quotations on mill shipments of No. 27 Common Iron are maintained at 2.80¢ @ 2.90¢, Chicago, with Steel Sheets selling at 10¢ @ 15¢ @ 100 advance. Galvanized Iron is in good demand, but mainly from localities outside of the city. The local trade is very light on account of the city ordinance to which previous reference has been made. A strong fight is in progress against this ordinance, which will probably result in its repeal. The most important local transaction the past week was for Galvanized to cover a large grain elevator, which will require about four carloads. The price on mill shipments of Juniata is steady at 70 and 10¢ discount. Small lots are selling at 70¢ @ 70 and 5¢; Sheet Copper is affected in the same way as Galvanized Iron, but small lots are unchanged at 30 and 5¢ discount.

Merchant Steel.—New business is light, the implement trade being quiet. Manufacturers of agricultural implements are feeling the effect of the backward season, and are, therefore, not being hurried in placing their season contracts for material. The leading manufacturers of this class of Steel are, however, in excellent shape for some time to come, and steadily maintain quotations at 2¢ @ 2.20¢, Chicago, on Open-Hearth Machinery and Spring Steel and Buggy or Smooth-Finished Tire. Iron Finished Tire is quoted at 1.70¢, with Bar-Iron extras. Ordinary Tool Steel is steady at 6¢ @ 7¢, and Specials at 12¢ upward.

Rails and Track Supplies.—Steel-Rail manufacturers report trade still confined to small quantities, on which \$30 @ \$32 continues to be quoted, according to quantity. Iron Splice Bars are selling at 1.55¢ @ 1.60¢, and Steel Splice Bars at 1.65¢ @ 1.70¢; Track Bolts with Hexagon Nuts are unchanged at 2.60¢ @ 2.65¢; Spikes, 1.95¢ @ 2.05¢.

Old Rails and Car Wheels.—The situation in Old Iron Rails is difficult to report in the absence of actual transactions. Holders ask \$18, which buyers refuse to pay. A consumer states that he has been offered a small quantity at \$17.50, but would not pay even that much. Old Steel Rails are quoted at \$11.25 @ \$15, according to length. Old Car Wheels are nominally quoted at \$14.50 @ \$15, but no transactions are reported.

Scrap.—The Scrap market, in the language of a dealer, is about dead. Consumers of high-grade stock are avoiding the dealers and purchasing from first hands at lower prices. Those who have occasion to buy in a regular way are obliged to pay the following prices per net

ton: No. 1 Forge, \$14; No. 1 Mill, \$10; Sheet Iron, \$8; Pipes and Flues, \$9.50; Axles, \$21; Horseshoes, \$14; Fish Plates, \$16.25; Spikes and Bolts, \$13.50; Cast Borings, \$5.75; Wrought Turnings, \$7.75; Axle Turnings, \$9.50; Heavy Cast, \$11; Stove Plate, \$8.50; Malleable Cast, \$9; Mixed Steel, \$10 @ \$10.25, gross ton; Leaf Steel, \$17.75.

Copper.—The opening of Lake Superior navigation being deferred, Lake Superior Copper is unchanged at 11½¢ in carload lots. Casting brands have again receded slightly and are now selling at 10½¢.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., May 9, 1893.

The events of the past week have not been conducive to improvement in the Iron trade, yet it is encouraging to find that it held its own, and from some points of view promises to do a little better than that. There can be no question that with a fairly easy money market Iron would improve, but as this is one of the things that cannot be absolutely depended upon, Iron must take its chances and go with the stream. From present appearances a favorable outcome is probably not unwarranted. There is plenty of business and nothing to interfere with a quick movement so far as regards stocks on hand. Consumers in all departments are more than usually dependent on immediate purchases to meet current requirements. That is to say, new orders have to be met with new purchases of material, while in no case are stocks of any amount being carried. The position in this respect is remarkably favorable, so that when the demand does come there is not likely to be anything to interfere with it. Of course, it will require favorable conditions in outside matters to bring about any marked improvement in Iron and Steel, but in considering them on their own merits, they are, as we said before, in perfectly good shape. Prices are firmer in Pig metal, weaker in Steel Billets, but steady in the finished article. The demand promises to be large, providing there are the usual bank facilities, but quite a large amount of business is held in abeyance, pending more definite knowledge on that feature of the situation.

Pig Iron—Good Irons are scarce, and holders of such have no difficulty in securing full market prices for anything they care to offer. In the majority of cases they have all the orders they want; and, while customers are not refused reasonable quantities, it is clearly evident that sellers would prefer being let alone until they can see their way a little further ahead. Heavy engagements for forward deliveries, of course, work both ways—large sales mean large purchases; so that, as a matter of fact, there is not a great deal of new business around, but such as there is is large enough to keep prices very firm. Alabama and some Virginia Irons are still the weak feature; and, while there is no extraordinary pressure to realize, the supply of ordinary Gray Forge at \$12.25 @ \$12.50, Philadelphia, is a little in excess of the demand, so that sales at less money are not infrequent; in fact, within a very close fraction of \$12 has been done in several recent transactions. But it is a curious market, some brands being absolutely impregnable, others ready to yield almost as soon as a good buyer begins to inquire about them. Nevertheless, the chances are not in favor of lower prices, and with anything like a fair, open field there is a possibility of moderate advance. For the present, however, sales are at figures as quoted here with for Philadelphia and equivalent deliveries, with 25¢ @ 50¢ less on Southern brands at Harrisburg and intermediately to Baltimore:

American Scotch, No. 1X.....	\$16.00	@	\$16.50
American Scotch, No. 2X.....	15.00	@	15.50
Standard Penna. (Lake Ore), No. 1x.....	14.75	@	15.25
Standard Penna. (Lake Ore), No. 2x.....	14.25	@	14.50
Standard Virginia, No. 1x.....	14.50	@	14.75
Standard Virginia, No. 2x.....	13.75	@	14.00
Virginia and Southern, No. 1x, Soft.....	14.00	@	14.50
Virginia and Southern, No. 2x, Soft.....	13.25	@	13.50
Standard Penna. and Virginia Forge.....	13.00	@	13.25
Ordinary Forge.....	12.25	@	12.50

Freights.

Alabama Furnaces, Rail to Philadelphia.....	\$4.31	@	.....
Alabama Furnaces, Rail and Water to Philadelphia.....	4.01	@	.....
Alabama Furnaces, Rail to Baltimore and Harrisburg.....	4.06	@	.....
Virginia Furnaces, Rail to Philadelphia.....	2.25	@	\$2.75
Virginia Furnaces, Rail to Harrisburg.....	1.50	@	2.00
Virginia Furnaces, Rail to Baltimore.....	1.75	@	2.25

Bessemer and Low Phosphorus.—The furnaces in this vicinity are either out of blast or have their product close sold up. Ores are scarce and dear, and at such prices as the market would now afford there is no inducement to continue furnace operations. F.O.B. prices would be \$15.25 @ \$15.50 for Standard Bessemer, and \$17.25 @ \$17.50 for Low Phosphorus..

Steel Billets.—Business in this line is slow, and while sellers intimate their willingness to shade prices, it is difficult to draw out the right kind of a firm offer. Sales have been made within the past few days at \$24 @ \$24.25, delivered, but for long delivery buyers want a figure below \$24. Requirements for May and June appear to be provided for, and for later dates consumers have not fully made up their minds what to do. It is a difficult problem in any event, and although the immediate outlook is not favorable from a sellers' standpoint, it may prove to be misleading to calculate on \$23 or \$24 Billets during the summer months. Meanwhile both sides are waiting to see what developments may be during the next few days.

Steel Rails.—A fair business is being done in small lots, sales during the past 30 days amounting to something over 80,000 tons. Prices are steady at \$29, f.o.b. cars at mills, for 56's and heavier, and Girder Rails, which are in active demand, \$33 @ \$34, f.o.b., cars mills.

Muck Bars.—There is some little business doing, and fair indications of a still better demand in the near future. Sales have been made at prices varying from \$22.50 to \$22.75 at sellers' mills, and at these figures prices are showing considerable firmness.

Bars—As a rule the market is said to be in a most unsatisfactory condition; but there is a better demand, although with out improvement in prices. Quite a nice distribution of orders for Cars has been given out and shops all through the eastern portion of the State are now doing a fair amount of work. Bars for Car purposes have sold at about 1.55¢, delivered, but for best qualities city delivery 1.62½¢ @ 1.65¢ is quoted, and from 1.60¢ to 1.85¢ for Steel Bars, according to quality requirements, &c.

Skelp.—A fair business is being done at 1.50¢ @ 1.55¢ for ordinary sizes of Grooved. Some makers claim to be holding for more money, but 1.55¢ for actual business is probably an outside figure for large lots.

Plates—This department of the trade keeps in comparatively good condition as regards the volume of business. Prices are no higher, but it is encouraging to note that manufacturers are talking more money, and with any increase in demand they will probably succeed in getting it. Mills are running pretty full, and from the number

of inquiries that are coming in there is a disposition to regard the outlook as favorable. The fact of a moderately active call for deliveries on account of sales during the winter months is helping the trade considerably, and with the usual demand for small lots, the market ought to assume an improving appearance. Nevertheless, extremely low prices have been quoted in some instances, although it is intimated that the quality is hardly likely to correspond with the grade which it is supposed to represent. General quotations are nominally as follows, but there is a wide variation, particularly in the higher qualities.

	Iron.	Steel.
Tank Plates.....	1.80 @ 1.85¢	1.80 @ 1.85¢
Shell.....	2.10 @ 2.20¢	2.10 @ 2.20¢
Flange.....	2.70 @ 2.90¢	2.25 @ 2.40¢
Fire Box.....	3.00 @ 4.00¢	2.50 @ 2.70¢
Special qualities.....	3.25 @ 3.75¢	

Structural Material.—There is nothing specially new in this market, but the mills are fairly busy on old work. The 16,000-ton order for the Park avenue extension of the New York Central is expected to be given out in a day or two, but it is not likely to be taken in this vicinity unless some of the New Jersey mills secure it. Prices are irregular and in large contracts are extremely low, but for small lots quotations are nominally as follows: Beams, Channels or Tees, 2¢ @ 2.20¢, according to size of order; Angles, 1.80¢ @ 1.85¢; Universal Plates, 1.80¢ @ 1.90¢.

Sheets.—There is no special change in the situation, the demand being fairly active, but prices as unsatisfactory as ever. Small lots of the best makes are steady at about the following quotations, but common qualities can be had at the lowest figures ever known:

Best Refined, Nos. 14 to 20.....	2.75¢ @ 2.85¢
Best Refined, Nos. 21 to 24.....	2.90¢ @ 3.00¢
Best Refined, Nos. 25 to 26.....	3.15¢ @ 3.20¢
Best Refined, No. 27.....	3.30¢ @ 3.40¢
Best Refined, No. 28.....	3.40¢ @ 3.50¢
Common, ¼¢ less than the above.	

Quotations given as follows are for the best Open-Hearth Steel, ordinary Bessemer being about ¼¢ lower than here named:

Best Soft Steel, Nos. 14 to 16.....	2½¢ @ 2½¢
Best Soft Steel, Nos. 18 to 20.....	2½¢ @ 3¢
Best Soft Steel, Nos. 21 to 24.....	3½¢ @ 3½¢
Best Soft Steel, Nos. 25 to 26.....	3½¢ @ 3½¢
Best Soft Steel, Nos. 27 to 28.....	3½¢ @ 3½¢
Best Bloom Sheets, ¼¢ extra over the above prices.	
Best Bloom, Galvanized, discount..	.70 and 5 % @ 70 and 10 %

Old Material.—Market dull, but what little business there is usually done at about last week's prices, say: Old Iron Rails, \$18 @ \$18.50, delivered; Old Street Rails, \$19 @ \$19.50; Old Steel Rails, \$15 @ \$15.50; No. 1 Railroad Scrap, \$15 @ \$16, Philadelphia, or for deliveries at mills in the interior, \$15 @ \$16, according to distance and quality; \$8 @ \$9 for clean new No. 2 Light Scrap; \$7.50 for old No. 2 Light Scrap; \$11.50 @ \$12 for Machinery Scrap; \$12 @ \$12.25 for Wrought Turnings; \$8 for Cast Borings, and nominally \$23 for Old Fish Plates, and \$13 @ \$14 for Old Car Wheels.

Wrought-Iron Pipe.—There is little room for remark under this heading, business being of much the same character as for several weeks past. There is no general increase in the demand, but there is less disposition to crowd the market, so that prices, though irregular, are comparatively steady and discounts nominally as follows:

Butt-Welded Black.....	60 %
Butt-Welded Galvanized.....	50 %
Lap-Welded Black.....	67½ %
Lap-Welded Galvanized.....	57½ %
Boiler Tubes, 2½ inches.....	65 %
Boiler Tubes, 3 inches.....	67½ %

Boston.

Office of *The Iron Age*, 146 Franklin St., }
BOSTON, May 9, 1893.

The feature of discussion in the Iron trade is the danger from strikes and labor troubles this summer. Agents of prominent Iron manufacturing concerns, while not positively urging their customers to close contracts and secure Iron before these labor troubles begin, are mentioning their fears and laying the case out plainly, with the suggestion that the placing of contracts on the present low basis of prices cannot prove otherwise than beneficial to buyers.

Pig Iron.—In Pig Iron there is yet a good trade, with some contracts being placed, but these contracts are at prices rather in the buyers' favor, for the simple reason that the furnaces are all fully supplied with Iron, and are anxious to sell. Orders of 300-ton and 500 ton lots are mentioned, generally of Southern or Virginia Iron. The prices of Southern Iron, ex-dock in Boston, are at: No. 1, \$15 @ \$15.50; No. 2, \$14.50 @ \$15; No. 3, \$13 @ \$14. Virginia Iron is yet in good demand, with No. 1 quoted at \$15.50 and at \$14.50 @ \$15 for No. 2. Pennsylvania Iron is very quiet here, with the shipping port prices at: No. 1, \$14.50 @ \$15; No. 2, \$13.50 @ \$14; Gray Forge, \$13 @ \$13.50. There is some demand for choice Western Irons, with the market at \$17.50 @ \$18, delivered, in Boston.

Bar Iron.—The market on New England Bar Iron is quiet and steady. The two or three mills left are running on old materials, and claim to have a good many orders. There are still many concerns where Soft Steel will not answer, and Bar Iron must be had. Old Material Bars are quoted at 1.60¢ @ 1.65¢ from mill; from store, 1.65¢ @ 1.70¢; best Puddled Iron Bars from mill, 1.80¢ @ 1.90¢; from store, 2¢ @ 2½¢. The position of Norway and Swedish Bars is a little easier, in anticipation of Iron about to arrive. As low as \$64.50 @ \$66 ½ ton is mentioned on Bars and Shapes out of store here.

Building Iron.—The position of Building Iron, or Steel, is easier, but at the same time it is claimed that the situation is precarious, from the danger of labor troubles, mentioned above. The week has been a quiet one in the way of contracts closed, though there has been some business of that nature, in the way of 50 and up to 100-ton lots. The Boston & Albany Railroad has just closed a contract with the South Baltimore Car Works for 700 freight cars, involving some 1600 tons of Steel, and the above car works are believed to have placed the contracts for the Steel, though Boston houses did not get them. Agents of prominent Pittsburgh houses here do not admit the low prices on Beams mentioned, f.o.b. Pittsburgh, though the agent of one prominent house will neither admit nor deny these prices. Quotations are easier at: Beams and Channels from mill, 1.90¢ @ 2¢; from store, 2.30¢ @ 2½¢; Tees, 2.20¢ @ 2.30¢ from mill; from store, 2.40¢ @ 2.65¢; Angles, 1.90¢ @ 2¢ from mill; from store, 2.20¢ @ 2.45¢.

Steel, Steel Plates and Steel Rails.—There is a fair demand for Merchant Steel, though the tendency is toward easier prices. Quotations are nominally unchanged, however: Bessemer Steel, 2¢ @ 2.10¢; Machinery, 2¢ @ 2.10¢; Tire and Sleigh Shoe, 1.95¢ @ 2¢; Sheet, 2½¢ @ 2½¢; American Cast, 6½¢ @ 7½¢; English Cast, 14¢ @ 15¢; American Steel Rails, \$29, at mill. There is some trade mentioned in Steel Rails, but generally the trade is complaining that the roads "have not the money to buy Rails with." Some business is offered, indeed, but at terms of credit longer than the mills care for. Steel

Plates are easy, with business wanted and being taken at easier prices: Tank, 1.85¢ @ 1.90¢; Shell, 1.95¢ @ 2¢; Refined, 2.10¢ @ 2.15¢; Flange, 2.15¢ @ 2½¢; Fire Box, 2½¢ @ 2½¢.

Nails.—The market on Nails is steady, with trade reported rather better since the weather is more mild. Cut Nails, both Iron and Steel, are quoted at \$1.50 @ \$1.60 ½ keg for small lots, and at \$1.45 @ \$1.50 for car lots. The Wire-Nail people are pretty firm in price, at \$1.75, to the trade here. The Cut-Nail people are feeling well over the results of the tests of the relative holding power of Cut Nails vs. Wire Nails. The recent tests made at the United States Arsenal, at Watertown, included 58 series of ten pairs each of both Cut and Wire Nails, and in every series the Cut Nails won, the percentage of superiority being from 47.40 % up to 135.20 % in favor of Cut Nails.

Pipe and Tubes.—Trade in Pipe is very fair, with some good orders for Water Pipes being booked. There is also a good demand for Tools, especially to go West. The position of prices is steady, and prominent dealers express the opinion that no changes will be made for some time. Boiler Tubes hold rather firm at 60 % @ 65 % off from list, on all sizes.

Scrap Iron.—Scrap Iron is dull, and the market is generally easier. No. 1 Wrought Scrap is scarcely quotable at above 52½¢ @ 55¢ ½ 100, though selected lots, including Old Horseshoes, are quotable at 60¢ @ 65¢. Light Scrap is dull at 30¢ @ 40¢, with Machine Shop Scrap at 25¢ @ 30¢ for Cast and at 30¢ @ 35¢ for Wrought.

Cleveland.

CLEVELAND, OHIO, May 8, 1893

The condition of the market may be calculated when it is said that shippers are talking of a 50¢ rate from Escanaba to Cleveland for bringing down Ore. The Norrie has made a sale of 400,000 tons to the Carnegie Company at exactly the figures prognosticated in *The Iron Age* five or six weeks ago—viz., \$3.80 ½ ton, f.o.b. vessel Cleveland. The price is fully 15¢ ½ ton above the rate generally discussed, but the quantity is really small in comparison with this firm's usual early season purchases. The purchase is not considered very important, inasmuch as transportation rates are dropping so rapidly that charters at 95¢ from Ashland to Cleveland are already being discussed. It is known also that some good Bessemer have been sold as low as \$3.75 ½ ton, f.o.b. vessels lower lake ports, and that non-Bessemer, only a shade below the Bessemer limit, are to be had at \$3.40 @ \$3.50 ½ ton. In the Pig Iron market buyers continue to rule things and are insisting on concessions in every direction. Until this dullness is displaced by something akin to activity, little in the way of Ore sales is to be expected. So many of the big mines are closed down that little business is expected for several days to come.

Iron Ore.—About 40,000 tons of Ore were sent forward to the furnaces during the past week, as compared with 23,000 tons for the corresponding week in 1892. The Ore market is lifeless, and there are few indications of any immediate activity. Non-Bessemer Ores are still to be had at figures below \$3 ½ ton, while \$3.70 @ \$3.90 are standard quotations for Bessemer. Vessel rates have tumbled to the lowest living figures. The situation is unique, and until it is relieved by some activity the Pig Iron market is likely to remain quite lifeless.

Pig Iron.—The market is weak, although a few sales of Bessemer at \$13.40, Cleveland, are reported. Better business

is looked for when the furnacemen begin buying Ore. Production is everywhere reported to be heavy. Quite a number of inquiries are coming in, but buyers insist on all the concessions, and only a few scattering sales are reported. Gray Forge is in some demand, but Foundry Irons continue weak.

Muck Bar.—The market is quite devoid of life. Last week's figures, \$24 ½ ton, Cleveland, still prevail.

Old Rails.—Some inquiry is noticeable and a few sales are reported at \$19.50 for Old Americans.

Scrap.—No. 1 Railroad Scrap is weaker and is now quoted at \$13.50 @ \$14. Other quotations remain unchanged.

Nails.—Local dealers quote Cut Nails at \$1.40 and Wire Nails at \$1.65, from stock.

(By Telegraph.)

Buyers say that the best price for the Norrie Ore by the Carnegie Company was \$3.85, f.o.b. vessel, lower Lake port. Good Bessemer, however, have been sold as low as \$3.75, same conditions. The market is dull, and Lake freights are far down. Charters for carrying Ore were made today at 50¢ for Escanaba to Cleveland, and 95¢ from Ashland to lower Lake ports.

Bessemer Iron is weak, even at \$13.40, f.o.b. Cleveland, and this rate is believed to have been cut in several instances. Non-Bessemer Ores on dock are selling as low as \$2.75 ½ ton, and the unsold amounts are being rapidly cleared away.

St. Louis.

(By Telegraph.)

Office of *The Iron Age*,
Bank of Commerce Building,
St. Louis, May 10, 1893.

Pig Iron.—The best that can be said about the market to-day is that it is no worse than last reported, which, when it is remembered that the downward tendency has continued unchecked for some months, is saying a great deal. There does not appear to be the same quantity of cheap Irons being marketed, and this in itself is a decided improvement. Furnaces have generally adopted \$8 and \$9 for Gray Forge and No. 2 Foundry, respectively, and consumers appear willing to pay these prices. The stringency in the money market brought about by the wholesale selling of industrial stocks will not help the situation any, and furnaces that are in need of money will doubtless find it difficult to obtain. For this latter reason there is a possibility that the sale of Iron may be forced, which cannot mean anything else but lower prices. This appears to be the weak point of the market, and with clearing in the financial atmosphere an improvement in the price of Pig Iron can be expected, but until this takes place any advance is entirely out of the question. The local demand is healthy, and consumers have all the work they can well attend to, although in some lines the Steel manufacturers are making rapid inroads, particularly in the Architectural lines. Prices are unchanged, although furnaces are not making the liberal concessions which were prevalent a month or six weeks since. To sum up the entire matter, the market is practically unchanged, although it is more favorable to the seller than it has been for some time. Sales during the week were limited, and the prices quoted below are the basis on which they were made. The prices are cash, f.o.b. St. Louis.

Southern Coke, No. 1 Foundry,	\$13.25 @	\$13.75
Southern Coke, No. 2 Foundry,	12.25 @	12.50
Southern Coke, No. 3 Foundry,	11.75 @	12.00
Southern Gray Forge.....	11.25 @	11.50
Southern Car Wheel.....	17.75 @	18.75
Lake Superior Car Wheel.....	17.00 @	17.50
Ohio Softeners	16.00 @	17.00
Missouri Charcoal, No. 1		
Foundry	13.25 @	3.75

Bar Iron.—A fairly steady demand for Bar Iron is reported by local mills, one mill closing an order yesterday for a 1000 ton order for prompt shipment on the basis of 1.52½¢, half extras, f.o.b. cars East St. Louis. Jobbers report an active demand and quote small lots at 1.70¢ @ 1.75¢.

Barb Wire.—The situation in this department is a peculiar one. The demand keeps up and mills and jobbers alike report a very active trade. In the face of this, however, prices are weak, and inclined to go lower. Rods, of course, are weaker, which tends to depress Barb Wire, but with the excellent demand at present prevailing \$2.20 for carload quantities to jobbers should be easily maintained. Instead, however, \$2.15 is the prevailing price for Painted, with 40¢ additional for Galvanized.

Wire Nails.—The demand for Wire Nails has been affected somewhat by the wet weather prevailing throughout the entire West during the past four weeks. Jobbers are not carrying very heavy stocks, however, and a slight improvement in the demand would bring them into the market as buyers. Mills quote \$1.65 for carload lots to jobbers.

Pig Lead.—Buyers are hard to find at 3.70¢, and offerings are made at 3.65¢, which does not result in any large business. The market is decidedly top heavy, and unless the demand improves very shortly prices ruling to-day will give away to still lower quotations. Producers are urging sales, which only helps to depress the market still further.

Spelter.—The market is lower and decidedly weak. Offerings for delivery during the balance of the year are freely made at 4.15¢, and it is intimated that 4.12½¢ would be accepted. The proposed consolidation was given its quietus late last evening when all but two of the 15 smelters in session withdrew, thus practically abandoning the consolidation. These different smelters have been withholding their product from the market in the hope that the consolidation would go through, which would mean a sharp advance. They are now throwing their product on the market, and even at 4.15¢ for deliveries during the entire balance of the year there are no buyers. It seems certain that before two weeks have elapsed 4¢ will prevail, as the consumptive demand is light and stocks heavier than they have been for some time.

Pig Iron.	Freight Rates.	Per ton.
Birmingham, Ala., to St. Louis.....		\$3.25
Chattanooga, Tenn., to St. Louis.....		3.00
Sheffield, Ala., to St. Louis.....		2.80
South Pittsburgh, Tenn., to St. Louis.....		2.87

Barb Wire and Wire Nails.	Per cwt.
Pittsburgh, Pa., to St. Louis.....	18½¢
Salem, Ohio, to St. Louis.....	16½¢
Cleveland, Ohio, to St. Louis.....	15¢
Anderson, Ind., to St. Louis.....	11¢

Baltimore.

BALTIMORE, May 10, 1893.

The activity noted in our last report still continues, but there is a decided inclination among sellers to require a strict adherence to the terms of sale, in spite of the too numerous requests for extensions or promises to settle by note. To say that the Iron market was in a more encouraging condition financially would be not strictly true. As regards quantity of business, there is little to ask for. In the present narrow margin of profits there is no temptation to part with goods except to thoroughly reliable parties. Boiler Tubes have been fairly active during the last week, one particularly large lot having been placed. In spite of the competition upon this lot it does not appear that

the agreement entered into between Tube manufacturers at their last meeting in New York has been departed from to any material extent, which fact is very encouraging, inasmuch as it shows a more healthy condition of business in at least one line.

Bars.—Purchases in this line have been mainly from stock. The very heavy stocks carried by dealers in this city, which cover almost anything within reason, induce users to buy less from mill than heretofore. Prices from stock range from 1.80¢ to 2¢, and from mill 1.75¢ to 1.80¢.

Plates have been rather quiet, although some few orders for small lots have been placed at the usual very low prices. Nothing startling is in the market, and, therefore, there has been little inducement to reduce prices from those last quoted. We quote Tank Steel at 1.80¢; Shell, 2.15¢ @ 2.25¢; Flanged, 2.30¢ @ 2.40¢; Fire Box and Marine, 2.45¢ @ 2.55¢.

Merchant Steel.—The bulk of business in this class of material has been in small lots from stock, with the exception of some special sections for particular purposes. We quote the following prices, which have been firmly adhered to: Machine Steel, 2.10¢ @ 2.25¢; Tire, 2.05¢ @ 2.15¢; Spring, 2.40¢ @ 2.50¢; Toe Calk, 2.35¢ @ 2.40¢.

Tubes.—Reiterating what we have stated above regarding prices, we quote regular business 65 % off for 2½-inch Steel and 67½ % for 3-inch and larger for shipments. Orders from stock command 5 % better prices.

Cincinnati.

(By Telegraph.)

Office of The Iron Age, Fifth and Main Sts.,
CINCINNATI, May 10, 1893.

There is nothing encouraging to report in Pig Iron. The situation is practically unchanged as far as prices are concerned, but some of the stronger Iron companies which have refused to accept the prices current are now free to accept orders. There are rumors that concessions have been made on No. 2 Foundry, even from the low price current, and they seem to be well authenticated, but if that has been done it is not general enough to warrant a lower quotation. While the demand for Gray Forge is so liberal that the market is well sold up, and it is firm, Southern Charcoal Iron is quiet; but there are inquiries which it is hoped may lead to a fair business at an early date. Lake Superior Charcoal Iron is selling to a moderate extent. There has been a fair volume of business in the aggregate during the week, but it was nearly all in small quantities and for immediate delivery. Buyers do not seem disposed to make engagements far into the future, preferring to keep close to shore. The melting of Iron in this district is evidently fully up to its usual proportions, and the consumptive side of the market is all right, but the trouble seems to be that there is too much Iron being made, much of which is urgently offered in the market. Quotations are as follows:

Foundry.

Southern Coke, No. 1.....	\$13.25 @ \$13.50
Southern Coke, No. 2.....	11.75 @ 12.00
Southern Coke, No. 3.....	11.00 @ 11.25
Ohio Soft Stone Coal, No. 1.....	16.00 @ 16.25
Ohio Soft Stone Coal, No. 2.....	15.00 @ 15.25
Mahoning and Shenango Valley.....	14.75 @ 15.00
Hanging Rock Charcoal, No. 1.....	19.00 @ 19.25
Hanging Rock Charcoal, No. 2.....	18.00 @ 18.50
Tennessee and Alabama Charcoal, No. 1.....	15.50 @ 15.75
Tennessee and Alabama Charcoal, No. 2.....	14.50 @ 14.75

Forge.

Gray Forge.....	10.75 @ 11.00
Mottled Neutral Coke.....	10.65 @ 10.90

Car Wheel and Malleable Irons.

Standard Southern Car Wheel....	18.00 @ 19.00
Lake Superior Car Wheel and Malleable.....	17.75 @ 18.00

Pittsburgh.

(By Mail.)

Office of The Iron Age, Hamilton Building,
PITTSBURGH, May 9, 1893.

The second week in May opens with the situation in the Iron and Steel trades not satisfactory in more ways than one, nor can anything of an encouraging nature be said as to the prospects for an early improvement, either in the direction of prices or demand. A very prominent and discouraging feature of the situation just now is the tight money market. From a number of prominent concerns we have reports to the effect that collections are distressingly slow, especially from the country districts, the extremely wet and unfavorable weather during April preventing the farmers from doing much of their spring work, and at the same time not allowing them to make purchases of farming machinery which they would otherwise have done. This stringency in the money market is also causing buyers to place their orders very sparingly, and buying in limited quantities only will doubtless be largely the policy until the money market has again become easier. The uncertainties surrounding the settlement of the different wage scales for 1893-94 is also having its effect, considerable agitation being kept up by the local newspapers, whose columns are full of accounts of strikes and lockouts that are to take place during the coming summer. Interviews with leading manufacturers would indicate that the outlook for a satisfactory settlement of the wage scale is not so ominous as represented by the reports, but, on the other hand, the prospects are that settlements satisfactory to all concerned will be secured when the different committees have come together in conference. For the week under review prices are practically unchanged, with the tendency in favor of stationary or lower values in some few lines.

Structural Material.—Thus far this month business has been slightly heavier than for the corresponding period in April, and it is believed that the tonnage for May will be considerably heavier than last month. The demand continues nearly altogether for ordinary lots, which in the aggregate sum up a fairly large tonnage. The consumption of Steel for building purposes in Pittsburgh is increasing very rapidly, and there are a number of buildings now in course of construction for which a good many tons of Shapes will be required. Prices have undergone no material change in the last week and we quote as follows: Beams and Channels in ordinary lots, 1.65¢ @ 1.70¢; Angles, 1.60¢ @ 1.70¢; Z-Bars, 1.80¢ @ 1.90¢, and Tees, 1.85¢ @ 1.90¢.

Ferromanganese.—Demand continues quiet, with prices unchanged at \$58.50 @ \$59 for domestic, f.o.b. cars Pittsburgh.

Steel Rails.—The report that the Sparrow's Point plant of the Pennsylvania Steel Company would probably be acquired by the local interest has been authoritatively denied. Orders for Steel Rails continue to be confined to small lots, with prices unchanged at \$29, f.o.b. at mill, for standard sections.

Plates.—The market is entirely featureless. Pittsburgh mills continue fairly well employed, but could doubtless take care of additional tonnage if it could be secured. The active competition prevailing continues to keep prices at a very low notch, with no immediate prospects of betterment in this direction. We quote as follows: Ordinary Fire Box at 2.25¢ @

2.50¢; best Quality, 3¢ @ 3.25¢; Flange, 1.90¢ @ 2¢; Tank, 1.60¢ @ 1.65¢; Shell, 1.75¢ @ 1.80¢; Universal Plates, 1.65¢ @ 1.75¢.

Bars—There is nothing new to report in the situation this week. There does not seem to be enough business to go around and keep the mills all employed, and as a result there is much competition for new business, which naturally keeps prices down to the lowest possible notch. It is the impression that from this time on buyers will anticipate their wants to some extent, for fear that labor troubles may cause a shut down of the mills for a period and thus cause some scarcity of material for prompt shipment. For this reason mills will probably run to greater capacity during this and next month than they have for some time past. We continue to quote Steel Bars at 1.50¢ @ 1.55¢, half extras, while in the Mahoning Valley Bars are held at 1.42½¢ @ 1.45¢, half extras, at mill.

Sheets—Satisfactory reports are received from makers of Iron and Steel Sheets, as far as volume of business is concerned, while some little complaint is heard of extremely low prices being offered when a desirable contract is on the market. Buyers will undoubtedly buy more freely during this and next month in view of possible labor complications, and this will have a tendency to stimulate business to considerable extent. Prices continue without material change, and for ordinary lots are ruling as follows: No. 24, 2.50¢ @ 2.55¢; No. 26, 2.60¢ @ 2.65¢; No. 27, 2.70¢ @ 2.75¢. For Soft Steel Sheets an advance of ½¢ is charged on above prices.

Pipes and Tubes—The large contract for Line Pipe referred to in our report of last week as being in the market has not yet been placed, but will probably be closed within the next few days. The demand for the various sizes of Pipes and Tubes continues fairly large and the outlook for the future is promising. Discounts are said to be closely maintained and are ruling as follows: Butt-Weld Black Pipe, 60 % discount from manufacturers' list; Butt-Weld Galvanized, 50 %; Lap-Weld Black, 67½ %; Lap-Weld Galvanized, 57½ %. On Boiler Tubes discounts are as follows: 2½-inch and smaller, 65 %; 3-inch and larger, 67½ %.

Wire Rods—The demand continues quiet, there seemingly being more Rods available than are needed. The decline in Steel has also affected Rods and we now quote on a basis of \$30, f.o.b. Pittsburgh. The prospects of an early improvement in either demand or prices are not encouraging.

Muck Bars—The market is exceedingly quiet, with an occasional sale of a few hundred tons reported. Pipe and Tube makers continue to be the best customers for Muck Bars, although the demand from this class of consumers is falling off largely and Steel is being substituted. We quote No. 1 Muck Bars at \$24, delivered at buyer's mill.

Wire and Cut Nails—As intimated in our report of last week, Wire Nails have eased off to some extent in price, and we now quote at \$1.50, Pittsburgh or Cleveland, in carload lots. Two reasons are advanced for this weakening in price, one of which is the rapid decline in the price of Soft Steel, and the other and principal reason is that a number of mills will soon have cleaned up their contracts and are feeling the market for buyers more energetically than they have for some time past. A fair amount of business is going, confined nearly altogether to carload lots, the larger buyers having satisfied their requirements early in the season and are consequently not in the market. The situation

in Cut Nails is without material change; a fair amount of business is going, mills in the Wheeling district being fairly well employed and are shipping a good many Nails. Prices are without change, and we continue to quote at \$1.15 base, in carload lots at mill.

Merchant Steel—A material increase in inquiries in the cheaper grades of Steel is reported, and a limited number of season contracts have been placed. It is the impression that the placing of season contracts will be a little later this year than usual, owing to the stringent money market, and it is also intimated that certain large buyers will curtail the size of their orders for the same reason. We continue to quote Open-Hearth Machinery Steel at 2¢ @ 2.10, and Bessemer Tire and Spring at 1.70¢ @ 1.75¢; Tool Steel is quoted from 6¢ upward, according to grade.

Wire—Mills making both Plain and Barb Wire continue to be operated to their full capacity, and in some cases it will be two or three months before contracts now on their books have been worked up. A fairly large amount of new business is coming in from the small trade and this in connection with season contracts gives the mills all they can do, and in some instances mills are from one to two months behind in shipments. Prices are firmly maintained and we continue to quote Painted Wire at 2.15¢ and Galvanized at 2.55¢, in carload lots, with slight concessions for round lots. Prices on Plain Wire are without change, and we continue to quote Nos. 6 to 9, 1.70¢; Nos. 10 and 11, 1.80¢ @ 2¢.

Scrap Iron and Steel—There has been no improvement in the demand for Scrap material, and the chances are that requirements will be light for some time to come. One reason advanced for the limited demand for Scrap is that Pig Iron is about as cheap and can be used to better advantage. We continue to quote Railroad Wrought at \$15 ¢ net ton; Wrought Iron Turnings, \$7; Coil Springs, \$17.50, and Leaf Springs, \$21.

Connellsville Coke—Advices from the Connellsville region are to the effect that the condition of the Coke trade is somewhat disappointing. Within the past month or so the demand has fallen off to a considerable extent, necessitating the blowing out, by the principal producers, of a large number of ovens. At this time more than one-third of the entire number of ovens in the Connellsville region is idle, and if it is still found that production is in excess of demand, an additional number will be blown out. For the week ending April 29 the total production of the region was estimated at 112,334 tons, which shows a decrease of 7350 tons as compared with the previous week. Prices continue somewhat irregular and are ranging from \$1.60 to \$1.70 for Furnace Coke in tons of 2000 lb, f.o.b. cars in Connellsville region. Prices on Foundry Coke are firmly maintained and it is held at \$2.15 to dealers and \$2.30 to consumers.

(By Telegraph, May 10, 12.55 p.m.)

Pig Iron—The week has been a quiet one and without special features. No little complaint is heard from furnacemen, both here and in the valleys, on account of the advance of 5¢ ¢ ton in freight rates on Pig Iron, which went into effect on Monday last. The claim is made that in view of the present depressed condition of the trade the advance was made at an inopportune time and was unwarranted by existing conditions. There is still considerable pressure to sell Bessemer Pig in this district, and with buyers holding off altogether, or buying only as their imme-

diate wants necessitate, the market has further declined, and within the last few days Bessemer has been offered for prompt delivery on a basis of \$13.25, Pittsburgh. It is understood that furnaces in the Mahoning Valley have sold a great deal of Iron for delivery during the last half of the year, one concern contracting for about 20,000 tons, and others for amounts ranging from 5000 to 10,000 tons. It is the impression that the market will not present any decided changes one way or the other until more is known about the price of Ore this year. The return from Europe of the chairman of the Carnegie interests, which is set for the latter part of this month, is expected to bring about negotiations with the Ore producers that will result in the closing of some additional contracts. Gray Forge is in light demand at unchanged prices. Occasionally a lot of off grade is sold in this market by the valley furnaces on the basis of \$12.10, Pittsburgh. We quote as follows:

Neutral Gray Forge.....	\$12.25 @	cash.
A-1 Ore Mill.....	12.50 @	"
No. 1 Foundry.....	13.75 @ \$14.00.	"
No. 2 Foundry.....	12.75 @ 13.00.	"
Charcoal Foundry No. 1....	17.00 @ 18.00.	"
Charcoal Foundry No. 2...	16.50 @ 17.00.	"
Bessemer Pig.....	13.25 @ 13.40.	"

We note a sale of 3000 tons of Bessemer for May and June delivery at \$13.40, Pittsburgh, and one of 2000 tons for June and July at \$13.35, Pittsburgh.

Steel—Nothing that is encouraging can be said of the Steel market this week. The advantages just now are on the side of the buyers, and they are making full use of them. Within the past week Cleveland has bought several additional blocks of Steel for the last of the year at prices somewhat lower than have yet been touched. One transaction involving about 6000 tons, equal deliveries July to December, was based on a price equal to less than \$21.25 at maker's mill. Small lots involving from 500 to 1000 tons have sold during the week at prices ranging from \$21.40 to \$21.75. A large user of Rod Billets is in the market for a good-sized block, but has set a very low price at which they are willing to purchase. The Duquesne mills have resumed, and, with improvements made during the shut-down, are expected to turn out about 1200 tons per day. The wage scale in blooming department of the plant has been rearranged and caused considerable dissatisfaction among the employees, but all have returned to work and there will be no strike.

Freights.

From Pittsburgh, Beaver Falls, Homestead, Rankin, Braddock and McKeesport to	Group 1.	Group 2.
Albany, N. Y.	\$2.40	\$2.70
Boston, Mass.	2.80	3.10
New York City, N. Y.	2.40	2.70
Philadelphia, Pa.	2.00	2.30
Syracuse, N. Y.	2.00	2.20

Rates shown under head of Group 1 will apply on Pig Iron, Mill Cinder and Scale, per gross ton, in carloads of 12 gross tons and over.

Rates shown under head of Group 2 will apply on Billets (Iron or Steel), Blooms

(Iron or Steel), Borings (Iron or Steel), Chain Irons (in coils), Crop Ends (Iron or Steel), Ingots (Iron or Steel), Muck or Puddle Bars, Old Car Wheels and Axles, Old Rails, Scrap Iron, Scrap Steel, Scrap Tin, Slabs, unfinished (Iron or Steel), and Wire Rods (in coils), per gross ton, and on Ingot Molds and Cast-Iron Pipe per net ton, in carloads of 12 tons, net or gross, and over.

Freight rates from Pittsburgh and points in Pittsburgh territory to points named below on the different classes and also on articles of Iron and Steel manufacture are as follows:

	Classes. Rates in cents per 100 pounds.						Articles of Iron and Steel.	
							L. C. L.	
	1	2	3	4	5	6	L. C. L.	C. L.
Rochest'r, N. Y.	32	27	21	14½	12	11	12	11
Syracuse, N. Y.	35	30	23	17	14	12½	14	12½
Utica, N. Y.	39	33	24½	18½	16	13	16	13
Oswego, N. Y.	39	33	23	19	16	13	16	13
Albany, N. Y.	45	39	30	21	18	15	18	15
New York City, N. Y.	45	39	30	21	18	15	18	15
Boston, Mass.	50	43	33	24	20½	17	20½	17
Portland, Me.	50	43	33	24	20½	17	20½	17
Burlington, Vt.	60	52	40½	29	24½	19½	24½	17
St. Paul.....	82	67	55	37	31	25	31	25
Duluth.....	75	62	50	36	29	25	24	20½
Detroit.....	81	68	56	38	31	25	31	25
Chicago.....	42½	37½	27½	20	17½	15	.....	.....

* Rates on articles of Iron and Steel will expire at close of business September 30, 1893, unless sooner revoked or superseded.

New York.

Office of The Iron Age, 96-102 Reade street, New York, May 10, 1893.

Pig Iron.—Business is very quiet, and while standard brands are holding their own very well, outside Irons are still pressed for sale. We quote Northern brands at \$14.50 @ \$15.25 for No. 1; \$13.75 @ \$14.50 for No. 2; \$12.50 @ \$13 for Gray Forge, tidewater. Southern Iron, same delivery, \$14.25 @ \$14.50 for No. 1; \$13 @ \$13.50 for No. 2, and \$13.25 @ \$14 for No. 1 Soft; \$12 @ \$12.50 for Gray Forge.

Spiegeleisen and Ferromanganese.—An Eastern Steel works has purchased 200 tons of Spiegeleisen and a lot of Ferromanganese at private terms. The market is dull with very little inquiry. Quotations remain nominally as follows: \$22 @ \$22.50 for 10 % and \$25 @ \$25.50 for 20 % Spiegeleisen, and \$57 @ \$57.50 for foreign 80 % Ferromanganese.

Billets and Rods.—Inquiry is on a limited scale, and there are indications of a pressure to sell for cash. We quote, nominally, domestic Billets, tidewater, \$23.75 @ \$24.25; foreign, nominally, \$29 @ \$29.25; domestic Wire Rods, \$33 @ \$34; foreign Wire Rods, \$40 @ \$40.50, and Swedish Rods, \$52 @ \$53.

Steel Rails.—Outside of an order for about 10,000 tons for a New England road, there is no business of magnitude in sight. We quote Standard Rails \$29 at mill or tidewater, and Girder Rails \$31 @ \$33.

Track Material.—Spikes are quoted at 1.85¢ @ 1.95¢; Fish Plates at 1.50¢ @ 1.60¢; Track Bolts, square nuts, at 2.4¢ @ 2.50¢, and hexagon nuts at 2.5¢ @ 2.60¢, delivered.

Manufactured Iron and Steel.—The event of the week has been the opening of the bids for the Park avenue improvement, 85 % of which is paid by the New York Central Railroad and 15 % by the city of New York. The bids were asked for four sections of elevated structure, the tonnage of the four being 4804 net tons for No. 1, 4026 net tons for No. 2, 3988 net tons for No. 3 and 4750 net tons for No. 4. The totals of the different items

of the four sections were 1308 tons of columns, 5745 tons of girders, 271 tons of bracing and 10,244 tons of floor system. Although bids were asked from 19 concerns only three responded, the New Jersey Steel & Iron Company, the Elmira Bridge Company and the King Bridge Company. The specifications are very exacting, and the conditions surrounding the erection of the work are very difficult, while the Steel is to be Open-Hearth of a manufacture approved by the superintending engineer. It is understood that Basic material has no chance. The chemical requirements call for phosphorus below 0.08; sulphur, 0.06, and manganese, 0.40 in the finished material, the tensile strength being between 58,000 and 65,000 pounds, and elastic limit not less than 38,000 pounds and the elongation not less than 28 % in 8 inches for Plates under 36 inches in width and 24 % for Plates over 36 inches in width, these specifications covering all Shapes, Bars and Plates. Some of the sizes called for are exceptional; thus under the main girders there are angles 8 x 6 x ¾ which must be 65½ feet long without a splice, and will weigh a gross ton each. It is understood that the New Jersey Company have bid only on three of the sections, and undertake to build only one of them, while the Elmira Bridge Company are the lowest bidders on the second, third and fourth sections. Roughly, the figures submitted per pound of structure erected are 3.70¢, 4½¢, 4.75¢ and 4.50¢ for the four sections erected. We print elsewhere the details relating to the bids for the new terminal station in New York of the New York and Brooklyn Bridge, where the successful bidders have named some low figures. No other contracts of consequence have been let during the week, the extension of the Produce Exchange still hanging fire. A good deal of figuring is going on, but on the whole the mills are eager for specifications on the whole line of Bars, Structural Material and Plates. In the latter we note a block of 400 tons at private terms. The market has not gained strength lately. We quote: Beams up to 15-inch, 1.80¢ @ 2.10¢; 20-inch, 2.10¢ @ 2.25¢, for round lots; Angles, 1.75¢ @ 1.90¢; Universal Mill Plates, 1.80¢ @ 1.90¢; Tees, 1.85¢ @ 2¢; Channels, 1.85¢ @ 2¢, on dock. Steel Plates are 1.80¢ @ 2¢ for Tank; 2.10¢ @ 2.25¢ for Shell; 2.25¢ @ 2.50¢ for Flange, and 2.50¢ @ 2.80¢ for Fire Box, on dock. Refined Bars are 1.65¢ @ 1.9¢, on dock, and Common 1.50¢ @ 1.60¢. Soft Steel Bars are 1.50¢ @ 1.60¢. Scrap Axles are quotable at 1.90¢ @ 2.10¢, delivered. Steel Axles, 1.85¢ @ 2¢, and Links and Pins, 1.85¢ @ 2.10¢; Steel Hoops, 1.90¢ @ 1.90¢, delivered; Cotton Ties, 80¢ @ bundle, at mill.

Merchant Steel.—We quote: Machinery at 1.75¢ @ 2¢; Toe Calk, 1.90¢ @ 2.10¢; and Sleigh Shoe, 1.75¢ @ 1.90¢.

Old Material.—We quote: Old Iron Rails, \$16.25 @ \$16.50, on cars Jersey City, and Old Wheel, \$12.75 @ \$13.

Stock Warrants.—Return of stocks.

Stock in yard April 1, 1893.....	77,900
Put in yard for 30 days ending April 30, 1893.....	2,200
Total.....	80,100
Withdrawn 30 days ending April 30, 1893.....	1,300
Net stock in yard April 30, 1893.....	78,800

Metal Market.

Copper.—During the week under review dealings have been of ordinary character and moderate, all told. The demand has dragged listlessly as well, and in a manner indicating that, having provided for near future wants to a considerable extent, consumers are now very

indifferent. The leading Lake Superior producer's price for Ingot has been advanced to 11½¢, but more than enough supply to fill current orders is found elsewhere at 11¼¢, and occasionally bids of 11¢ are accepted. Speculators offered distant future deliveries at 10.90¢. Casting Copper has undergone no radical change in value. The popular quotation on round lots is 10½¢, and up to 10¾¢ is asked for small parcels. The Bureau of Statistics' monthly statement affords the following comparison of exports from the United States:

Ore—	Month ending March 31, 1893.		Nine months ending March 31, 1892.	
	Tons.	Tons.	Tons.	Tons.
U. Kingdom...	2,521	3,394	29,229	23,709
Germany.....	28	221	106	1,234
Other Europe. ....	.....	.....	.....	100
Total.....	2,549	3,615	29,335	25,043

Ingots—	Month ending March 31, 1893.		Nine months ending March 31, 1892.	
	Pounds.	Pounds.	Pounds.	Pounds.
To United Kingdom.....	102,995	102,995	258,450	1,205,183
To Germany.....	258,450	258,450	1,539,334	678,850
To France.....	1,539,334	1,539,334	1,470,878	2,237,121
To other Europe.....	.....	.....	.....	2,054
Total.....	3,371,657	3,371,657	4,123,208	4,123,208

	Nine months ending March 31, 1893.		Nine months ending March 31, 1892.	
	Pounds.	Pounds.	Pounds.	Pounds.
To United Kingdom.....	2,072,112	2,072,112	12,296,571	12,296,571
To Germany.....	2,518,756	2,518,756	6,517,720	6,517,720
To France.....	8,602,421	8,602,421	18,534,138	18,534,138
To other Europe.....	8,076,456	8,076,456	12,932,261	12,932,261
To other countries.....	57,787	57,787	48,085	48,085
Total.....	21,327,532	21,327,532	50,328,775	50,328,775

Pig Tin.—The conditions that prevailed a week ago exist at the present time and the weight of excessive supplies has meanwhile forced prices to a lower level. Speculation has been quite active at the decline, chiefly in contracts involving current month, June and July delivery, but purchases by distributors and consumers continue on very conservative lines. May delivery has dropped from 20¼¢ to 20.35¢; June from 20.65¢ to 20.40¢ and later deliveries proportionately. Within two weeks' time there has been a decline of 60¢ @ 100 lb in price of July delivery. On May delivery there has been a fall of 30¢ during the same period. Spot stocks have increased considerably and are now estimated at 5200 tons upward. Besides this, there are 1300 tons afloat, making over four months' supply in first hands that can be counted up readily. On Wednesday there were offers to sell at 20¼¢ for prompt, 20.35¢ May delivery, 20.40¢ for June and 20¼¢ for July.

Pig Lead.—Prices have been moving gradually downward, under the influence of freer offering and continued narrow outlet. The market is at present in a weak, unsettled condition, with deliveries from June to August inclusive offered at 3½¢ and buyers very indifferent. Several hundred tons were sold on the decline, but the movement is rather slow at the moment, and little interest in other than moderate quantities is manifested by consumers. At the close of the week there was additional pressure to sell, under which prices receded to 3.85¢ for this month and 3.80¢ for June delivery.

Spelter.—There has been somewhat freer offering of Western brands for late June and more distant future delivery, and with it some softening of prices. Spot stock is scarce and commands 4½¢. Prompt shipments are also firmly held at that price, but July delivery may be secured at 4.45¢, and deliveries further ahead at 4.40¢. Business has been of moderate volume, and the demand in this quarter is without sign of improvement. At the close the offering from the West was more urgent, with sellers of June and July shipments at 4.35¢ @ 4½¢ landed here.

Antimony.—Of jobbing quantities there has been about the usual movement and prices have undergone little or no change. Current quotations are 10¢ @ 10½¢ for Hallett's, 10½¢ @ 10½¢ for L.X., and 10½¢ @ 10½¢ for Cookson's.

Tin Plate.—The market is without change. Business continues slow and there is little if any improvement in the demand for either prompt or future deliveries. Sellers' figures about the same as they were last week, but somewhat deficient in point of firmness. Spot quotations are as follows: Coke Tins—Penlan grade, IC, 14 x 20, scarce; J. B. grade, do., \$5.50; Bessemer full weight, \$5.50; light weights, \$5.10 @ \$5.12½ for 100 lb, \$5 for 95 lb, \$4.90, for 90 lb. Siemens Steel scarce. Stamping Plates—Bessemer Steel, Coke finish, IC basis, \$5.60 @ \$5.65; Siemens Steel, IC basis, \$5.75; IX basis, \$6.85. Charcoals—Melyn grade, IC, \$6.50; Crosses, \$8; Allaway grade, IC, \$5.70; Crosses, \$6.90; Grange grade, IC, \$5.80; Crosses, \$7. Charcoal Terns—Worcester, 14 x 20, \$5.70; do., 20 x 28, \$11.35; M. F., 14 x 20, \$7.25; do., 20 x 28, \$14.50; Dean grade, 14 x 20, \$5.30 @ \$5.37½; do., 20 x 28, \$10.50 @ \$10.70; D. R. D. grade, 14 x 20, \$5.20; do., 20 x 28, \$10.30; Wasters—S. T. P. grade, 14 x 20, \$5; do., 20 x 28, \$9.70; Abercarne grade, 14 x 20, \$4.95; do., 20 x 28, \$9.50. Black Plates for tinning, to arrive, are quoted at \$3.65 @ \$3.70 for IX, and \$3.70 @ \$3.75 for IC, to arrive.

Financial.

The mercantile world had a narrow escape last week, on account of the collapse of the so-called "industrial" stocks, but, as the sequel proves, the trouble on the Stock Exchange was local and circumscribed, inasmuch that the New York Associated Banks would be loth to admit that they were in the least concerned, or in anywise affected. The officers of these institutions have declined to recognize Sugar, Cordage, or any others of the industrials as collateral for loans, and in consequence survive the scrimmage almost unscathed. During the week large blocks of these stocks were urgently tendered, to no purpose. Meanwhile mercantile customers were accommodated as usual. There are some who assign the troubles referred to to the contraction of credits. True, the loans of the New York banks are \$68,000,000 less than they were a year ago. An experienced bank officer explains that this is due to two causes: 1, the conservatism of the mercantile classes, whose business is much less extended; 2, the efficiency of the Stock Clearing House, which permits transactions aggregating about \$7,000,000 to be settled with only about \$500,000 actual cash. In the same way the Associated Banks, operating on a much larger scale, settled last Tuesday's business, amounting to \$168,000,000, with, say, \$7,000,000 cash. Thus large temporary loans are avoided. Otherwise, as will be readily seen, the money troubles of the week would have been aggravated many fold. Another influence not to be ignored is the distrust growing out of the silver question. Happily, failures not connected with speculations are rare, and with more reason than before it can be affirmed that the general business situation is sound.

The stock market has so far recovered from the panic in industrials that the ordinary course of events is resumed. On Friday fluctuations were wider than they have been at any time since the panic of 1873, there being first a flurry downward of from 5 to 23 points, followed by a rapid rally of from 8 to 16½ points. The only important failures are those of Henry Allen

& Co. and S. V. White. The National Cordage Company went into receivers' hands. The refusal of money lenders to accept the industrials as collateral compelled holders in many cases to sell at ruinous prices. On Saturday there was another sharp break, and on Monday Sugar was especially affected by an advance in the price of the refined product, and also by a rise in raw sugar in Europe, while Cordage was weak on reports that the paper of the company was being protested, and that the concern would probably have to be reorganized. There was good buying of the leading stocks, and the market was buoyant at the close. On Monday Whisky was broken down on a report that a further reduction in the price of the product will be ordered. The arbitrage buying of stocks was checked by news of the failure of the Bank of Victoria, with \$35,000,000 liabilities, and by dearer discounts in London. Cotton Oil broke heavily. It was announced that Chancellor McGill had refused to order the opening of the Cordage transfer books and that the appointment of a receiver carries with it the suspension of all business.

Exports of merchandise from this port for the week were \$8,141,000; imports, \$15,372,000.

Government bonds were firm at the board. \$11,000 coupon 4s sold at 112½ @ 113, and \$15 000 registered at 112½.

Money on Friday, during the greatest excitement, advanced to 40 %, but was plenty on good collaterals at 7 %. Time loans were in good demand, but they were firmly held at 6 % on prime collateral, and gold notes were usually demanded. Commercial paper was almost stagnant, and rates were nominally 6 % for the best names. The city banks were not in the market. The bank statement showed a gain of \$1,115,800 in cash, and of \$679,025 in surplus reserve, making this item \$12,835,175. On Monday the gold in the United States Treasury footed up \$97,864,505. The "low-water" figure was reached April 25, when it was \$92,752,910. Since then the export of gold has been comparatively light. It is probable, however, that during this week gold to the amount of \$1,000,000 will be taken for shipment to Europe.

The sterling exchange market failed to reflect the foreign purchases of securities, partly because of the easier feeling in and lower rates for money on call. The posted rates are \$4.86 for 60 days and \$4.89 for sight. The market is steady. The Bank of England advanced its rate of discount to 3 %.

The International Monetary Conference in Brussels was adjourned until some time next November.

The merchandise markets are unsettled and generally dull owing to extreme conservatism, closer money and the uncertain future. On the Produce Exchange at the close wheat was excited and higher on better foreign markets and unfavorable crop reports from the West, the weather making a late season. Wheat gained 3¢ in the week. Corn and oats also advanced. Lard and meats advanced. Coffee was higher. Business in cotton light. Refined sugar advanced ¼¢ for all grades.

The circulation of money *per capita* in the United States, by the latest Treasury statement, is \$23.97. The total circulation is now \$1,599,028,335, against a circulation one year ago of \$1,613,572,244. The circulation includes gold coin, \$410,759,520; gold certificates, \$105,272,029; silver certificates, \$321,707,726; Treasury notes, Act of July 14, 1890, \$128,779,103; United States notes, \$319,807,117; currency certificates, \$15,840,000; national bank notes, \$171,770,215.

Coal Market.

The Anthracite Coal trade is quiet, particularly in the Eastern trade. While the companies claim to maintain schedule prices, a good deal of Coal finds its way into market at a shade below, as for some weeks past, and the talked-of advance June 1, it is surmised, can be made only on paper. Prices, however, are helped by the interruption of mining by floods, a score of the Reading collieries having been compelled temporarily to suspend. Despite this drawback Reading shipments have been very large, and the total production shows an increase over the large business of 1892. A Scranton paper says: "The special feature is the increase in the Lehigh region, which for several years has shown a comparatively small gain. The returns from the Schuylkill region are also significant, as the increase they exhibit reflects the improvement in the business of the Reading company."

Stove Coal is \$4.15, f.o.b., gross, circular. Commission houses are allowed 10¢ per ton extra commission, making 25¢ commission to them, of which they give the retail trade 15¢. Bituminous Coal is very quiet.

A Reading official is quoted as saying: "It is absolutely necessary to shut down. The output is nearly 1,250,000 tons ahead of the output for the same period last year." Week's production, 844,113 tons; year, 13,222,025; increase, 1,188,833. Reading Coal tonnage, 378,000 tons Pennsylvania Railroad Coal tonnage, 321,277 tons; Coke, 105,368. Bituminous Coal regions shipped as follows: The Norfolk and Western regions, 87,858 tons; Clearfield, 68,698; Huntington, 47,554; Beech Creek, 65,988. The excess of Soft Coal production for the regions above named over last year to date is 1,121,810 tons.

The consolidated Philadelphia, Honesdale & Albany Railroad, just organized, will run a line from White Haven, Luzerne County, Pa., to the New York State line and thence to the capital.

British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, May 10, 1893.

There has been very little change in the condition of the Iron trade. Consumptive demand continues slow and speculative interest is narrow. Warrants have ruled somewhat lower, Scotch selling at 40/6, Cleveland at 33/7½, and Hematites at 44/9. Very little change has taken place in stocks in public stores. Exports last month were 81,000 tons, against 61,000 tons in April, 1892. Trade returns for the month are generally unfavorable.

The Pig-Tin market has been inactive, and apart from a slight weakening on prompts, prices have undergone little change. Operators are undecided. The course of the American market rules speculation in a great measure at the moment. The market at the close of the week was weak, with Straits quoted at £92. 2/6 for prompts and £87. 10/ for three months' future.

The Copper market has been quiet and prices have averaged a shade lower, with sales of Merchant Bar prompts at as low as £44. 1/3. Adverse American reports, together with free sales here, have depressed the market in the face of favorable statistics. Closing quotations were £44 for

Merchant Bar prompts, £44.10/ for futures and £48.10/ for best selected English.

The market for Tin Plate remains very quiet. Business is mostly in Oil sizes, prices for which average about 2 pence less at Swansea than they did a fortnight ago. Exports increased last month to the extent of 297 tons. The movement to the United States was larger last month by 590 tons than in March. Work at several mills has been curtailed by the drought. Stocks at shipping ports amount now to 246,000 boxes. In the Liverpool market prices rule as follows:

IC Charcoal, Alloway grade 13/3 @ 13/9
IC Bessemer Steel, Coke finish..... 12/0 @ 12/3
IC Siemens 12/3 @ 12/6
IC Coke, B. V. grade 14 x 20..... 12/0 @
Charcoal Terne, Dean grade..... 12/6 @ 14/

Pig Lead has met with moderate sale and the market is easy, with £9. 12/6 quoted for Soft Spanish.

Spelter is offered rather more freely and the market is easier, with sellers at £17. 15/ @ £17. 17/6 for ordinary Silesian.

PERSONAL.

Robert Klein and Gustav Klein of Siegen and Gustav Kuphaldt of Dahlbruch, prominent German engineers, are now in this country.

The will of Robert Patterson, the iron manufacturer of Philadelphia, contains a number of charitable bequests, among them \$160,000 to a college in Montgomery County.

Dr. Duerre, professor of metallurgy at the polytechnic school at Aix-la-Chapelle, is now visiting this country.

Dr. W. B. Phillips has severed his connection with the *Engineering and Mining Journal*, as one of its editors, to accept the post of general and consulting metallurgist of the Tennessee Coal, Iron & Railroad Company.

Among those proposed for membership in the American Society of Mechanical Engineers are D. Almy of the Almy Water Tube Boiler Company, Providence, R. I.; James B. Dickson, president of the Dickson Mfg. Company of Scranton, Pa.; R. Conrader, superintendent of the Jarecki Mfg. Company, Erie, Pa.; Clark Fisher of Trenton, N. J.; Fitz William Sargent of Chicago, and Axel Sahlin of New York.

A. R. Whitney of New York has returned from the Puget Sound country. Mr. Whitney reports that coking coal has been discovered. He is interested in the proposal to establish a steel plant at Everett, with blooming mill, rod mill and plate train, one for the supply of the wire nail plant and the other to provide material for the local whaleback shipyard.

The report that John A. Potter, formerly superintendent of the Homestead Steel Works, had been appointed mechanical engineer for the Pennsylvania Steel Company is denied by that gentleman.

The contracts for the new terminal station in New York of the New York and Brooklyn Bridge were awarded on the 8th inst. Three companies entered bids for the iron work, as follows: Levering & Garrigues, \$247,629.30; Milliken Bros., \$265,642.67; and the Phoenix Bridge Company, \$259,887.64. The latter concern have the contract for the new Brooklyn station, awarded some time since. The specifications for the New York station call for a structure 580 feet in length and 87 feet wide, the dimensions being about double those of the present station. There will be four tracks, arranged so that twice as many trains can be operated as at present, and the headway can be reduced

from 90 seconds to 45 seconds, practically doubling the present capacity of the cable railroad on the bridge. The building will be two stories high, and the work of construction must be carried on without interfering or delaying the operation of trains. Two elevators—capable of carrying 20 persons each—will carry passengers from the street to the platforms, which will be on the second story, as at present.

The following table contains the different items of iron and steel and the bids entered for the same by the three companies:

Title.	Quantities.	Levering & Garrigues.			Phoenix Bridge Co.
		Cents per lb.	Milliken Bros.	Cents per lb.	
Riveted girders—wrought steel ...	582,300 lbs.	3.4	4.025	3.63	
Latticed girders—wrought steel...	171,100 lbs.	3.6	4.485	3.63	
Roof trusses—wrt. steel.....	371,600 lbs.	3.8	4.37	4.18	
Outer stairway stringers—wrt. steel	28,300 lbs.	6.0	4.37	5.13	
Columns and struts—wrought steel..	161,500 lbs.	4.5	4.485	3.83	
Rolled beams and channels—wrt. steel.....	431,000 lbs.	2.9	3.45	2.98	
Purlins, cast iron..	246,300 lbs.	3.9	4.43	4.18	
Angle braces, plates &c.—wrt. steel..	150,000 lbs.	4.0	4.45	4.18	
Arch ties and wind brace rods—wrt. steel.....	43,000 lbs.	4.0	4.5	4.28	
Wind brace struts—wrought steel....	30,000 lbs.	5.0	4.7	4.03	
Gutters, moldings, risers, &c.—cast iron.....	464,000 lbs.	7.5	7.7	7.6	
Floor surfaces, calcareous concrete.	95,000 sq. ft.	8.25	5.5	5.3	

For building the two elevators Levering & Garrigues bid \$7000, Milliken Bros. \$5300, and the Phoenix Bridge Company \$7030. For taking down the existing station the bids were, respectively, \$10,590, \$15,000 and \$9000; for the erection of old wrought iron and steel parts, consisting of 730,000 pounds, $\frac{1}{16}$, 1 and 1 cent per pound, respectively, and for the erection of old cast-iron parts, containing 300,000 pounds, $1\frac{1}{16}$, 1 and $4\frac{1}{2}$ cents per pound, respectively. The specifications called for bids on 71 items, and included sheet copper, galvanized sheet iron, brick, granite, concrete, wood work, &c.

Wm. Swindell & Brothers, Engineers and contractors, of Pittsburgh, Pa., have five of their recuperative steel-heating furnaces in operation at the plant of the La Belle Steel Company, Allegheny, Pa. These furnaces are heated with manufactured gas, supplied by three improved Swindell gas producers, the furnaces acting direct without reversing, and giving a uniform soft heat. Of the five furnaces three are used for heating ingots and iron centers, one to reheat and scale and the other for annealing purposes. The product consists of sheet steel of various kinds used for agricultural implements and for other purposes. The output of the furnaces is said to average 35 to 40 tons per day, while the consumption of fuel is given as 395 pounds of coal to the ton of finished product. When the fact is considered that the steel is heated twice and often three times in the process of manufacture, the claim is made that the saving in fuel is very considerable, being not less than 66 per cent. in favor of this method over the old system of the coal furnace, while the product is claimed to be very much improved. The arrangement of these furnaces is said to be most complete for the production of steel and iron

sheets, and when the question of economy in fuel is considered the results, as stated above, are extremely satisfactory.

Failure of the Premier Steel Company.

The announcement of the failure of the Premier Steel Company of Indianapolis, Ind., employing 1000 men and representing \$1,500,000 capital, was made on the 6th inst. Only to a limited extent had there been any suspicion that the biggest concern in Indianapolis was embarrassed, and this was only surmised on account of a \$300,000 mortgage placed on the steel works a few weeks ago, publication of which was suppressed to avoid injuring the company's credit. The mortgage was to secure that amount of bonds which had been taken by the American Trust and Savings Bank of Chicago and the Bank of Commerce of Indianapolis. Judge Brown appointed John E. McGettigan receiver. Mr. McGettigan is president of the Indianapolis Switch & Frog Company.

Officers of the Premier Company have avoided going into details as to the extent of the failure, and hence how many, if any, other companies will be carried down with it cannot be got at. W. H. Coen, secretary of the company, says with proper management the company can work out their indebtedness. They have large contracts on hand and have made extensive improvements in the three years since they were organized from the old Indianapolis Rolling Mills. A new blooming plant costing \$125,000 was only recently added. The company manufacture steel beams up to 20 inches in width, other structural shapes, billets and bars.

The Depauws are the large glass manufacturers of New Albany and Alexandria and are the principal backers of the Bank of Commerce, which was handling the Steel Company's paper.

The cause of the failure is nominally ascribed to the stringency of the money market and the continued depression of the steel business. The immediate cause is the inability to meet several heavy demands. Mr. Depauw, in his bill asking for a receiver, alleges that he is one of the largest stockholders in the company and is also liable as indorser upon their paper to the amount of \$100,000, which the company are now unable to meet and will be unable to meet as the various notes and amounts become payable; he alleges that the company are insolvent at the present time or upon the verge of insolvency, and that some of the creditors holding paper are demanding payment of their claims and threaten suit if they are not paid. Should suit be brought on these various claims and sales made on execution, it is alleged that the creditors and stockholders of the company would sustain unnecessary loss by the increase of expenses thus entailed in the way of costs in the multitude of actions, and would probably not realize more than 50 per cent. of their claims. The receiver, J. E. McGettigan, gave bond with C. W. Depauw, James H. Wilson, Otto Gresham and A. C. Ayers as sureties. The receiver was ordered to take immediate possession and to continue operation on the works until the further order of the court.

We are authoritatively informed that there is no truth in the report that the Maryland Works have been examined with a view to purchase by a prominent Pittsburgh interest.

It is claimed that among the list of delegates elected by lodges at Youngstown, Ohio, to attend the annual convention of the Amalgamated Association of Iron and Steel Workers to be held in Pittsburgh in June, there is but one finisher, all the other delegates being puddlers.

HARDWARE.

Condition of Trade.

THE VOLUME OF BUSINESS in some sections has been diminished by the backward spring and the bad weather which has prevailed, but on the whole there is little reason for complaint. The market is characterized by little of the speculative element and purchases are confined for the most part to early requirements. In most lines of goods there is no difficulty in having orders filled as promptly as desired, but in some lines there is more or less delay. The tone of the market is steady, prices being well maintained, and in some lines, such as Bolts and Nuts, an improved tone is noticeable, while on the other hand some staple goods, like Nails, are slightly lower than heretofore. In some kinds of shelf Hardware prices are being somewhat strengthened by the action of manufacturers who have reached, or are attempting to reach, an understanding. There is some complaint in regard to collections, and the financial condition induces a conservative course on the part of careful business men.

Chicago.

(By Telegraph.)

The volume of business in the Shelf Hardware trade, which has been steadily diminishing since the spurt early in April, shrunk last week to the smallest proportions for years. The complaint of dullness is universal. Salesmen have returned from several Western districts, as they found it undesirable to continue to solicit business during the unfavorable weather and the wretched condition of the country roads, which has checked traffic. The weather is held responsible almost entirely for the dullness of trade. The fine prospects which were so glowing last month have completely disappeared, and everybody is now speculating in what the future has in store. It is feared that in the advent of more favorable weather the farmers will be so busy seeding that continued dullness will prevail in Hardware circles, making the remainder of May and perhaps June a steady per cent. of bad trade. Collections are exceedingly slow and money is tight. The heavy Hardware trade is in a little better condition than Shelf Hardware, but not very much.

St. Louis.

(By Telegraph.)

We are again compelled to report a light demand for shelf goods in consequence of the stormy weather prevailing during the past week. Hot weather goods are also being affected, and Gasoline Stoves, Refrigerators and Ice Cream Freezers are just now considered heavy stock. In some lines, however,

a heavy trade is reported, principally in Bolts and Nuts and the cheaper grades of Builders' Hardware. Screen Wire continues, as last reported, very scarce, and price is quoted all the way from \$1.75 to \$2. The demand for Manila Rope is heavy, while the price is lower. Wire Nails and Barb Wire are weak, while Cut Nails remain unchanged. Bicycles continue to grow in popularity, and jobbers are complaining regarding delayed shipments from factories.

Notes on Prices.

Cut Nails.—The Cut Nail market has developed little change since our last report. In the Eastern market prices are represented by the quotation of \$1.10, which is now quite generally named for carload lots at mill, having been in a few cases shaded. Small lots from store in New York are quoted at \$1.35 to \$1.40. The Western market is in a more satisfactory condition, but there is some unevenness in quotations named by different mills in the same district. The volume of business is only fair.

Chicago, by Telegraph.—Steel Cut Nails are in a little better demand, but the volume of business is by no means satisfactory to manufacturers. They quote factory lots at \$1.30 to \$1.35, Chicago, while small lots are selling from stock at \$1.35 to \$1.40.

Wire Nails.—The Wire Nail market is perhaps a shade weaker than last week, and the quotation of \$1.50 for carload lots at mill is more generally made than at our last report, so that \$1.55 may now be regarded as rather exceptional. The action of some of the mills in naming the former figure naturally induced others to follow, and the fact that nearly all the large jobbers are holding stocks purchased at lower figures has enabled them to meet or undersell the manufacturers' prices. The mills are generally well occupied on orders which are not, however, coming in as freely now as a few weeks ago.

Chicago, by Telegraph.—Wire Nails are again irregular, manufacturers are no longer adhering to the uniform price which was established last month. Their trade has been confined almost entirely to carload lots, the large buyers being well fixed with contracts for some time to come. The trade is, however, not demoralized, quotations running about \$1.52½ to \$1.55, Chicago, for large lots from factory. Carload lots are selling at \$1.60. Jobbers' prices are \$1.65 to city trade, and \$1.70 to \$1.75 to country trade.

Barb Wire.—The Barb Wire market is quiet and without material change. We quote \$2.45 to \$2.50 for Four Point Galvanized in carload lots at mill. Small lots delivered in New York are quoted at \$2.70 for Galvanized and \$2.30 for Painted.

Chicago, by Telegraph.—Barb Wire shows no change whatever, either in the character of orders or in selling price. Manufacturers' quotations are still \$2.20 for Painted and \$2.60 for Galvanized. Jobbers' quotations are \$2.30 to \$2.70, respectively.

Thompson's Sample Holder.—This article is put on the market by Massey & Thompson, Monroe City, Mo. It was illustrated in a recent issue. The Holder is sold to the trade, packed three dozen in a box, assorted or otherwise, with screws, at \$9 per gross.

Spring Back-Window Cleaner.—A description of this Cleaner appeared in a recent issue. It is put on the market by Wm. Vogel & Bros., 37-47 South Ninth street, Brooklyn, as selling agents for H. Clayton & Co. The Window Cleaner is sold to the trade from the following list, which is subject to a discount of 33½ per cent., f.o.b. New York:

No. 30, 8 inch, per dozen	\$2.40
" 32, 10 " "	3.00
" 34, 12 " "	3.60
" 36, 14 " "	4.20

J. L. Taylor Pipe and Nut Wrench.—This Wrench, for the sale of which Hermann Boker & Co., 101 and 103 Duane street, New York, are sole agents, is described on another page. It is sold to the trade from the following list, which is subject to a discount of 40 to 40 and 10 per cent.:

Length open, inches.	8	12	15	20	25
Price.....	\$2.00	2.50	3.00	4.00	6.00
Teeth Plates, per pair.....	.20	.25	.30	.35	.35

Good Luck Freezer.—Chas. W. Packer, 20 North Fourth street, Philadelphia, is putting on the market this Ice-Cream Freezer, a description of which appeared in our last issue. The Freezer is sold to the trade from the following list, which is subject to a discount of from 65 to 65 and 5 per cent.:

Quarts..	2	3	4	6	8
	\$3.75	4.50	5.50	7.00	9.00

Acme Corrugated Steel Mat.—This Mat, manufactured by Cobin Mfg. Company, 107 Chambers street, New York, a description of which appears in this issue, is sold at a discount of 50 per cent. from the following list:

No.	Inches.	Each.
1.	16 x 24.....	\$2.00
2.	18 x 30.....	2.50
3.	22 x 36.....	3.50
4.	24 x 48.....	5.00
5.	30 x 48.....	6.00
6.	36 x 48.....	7.00
7.	36 x 60.....	9.00
8.	36 x 72.....	11.00

Aerating Pump.—Sandwich Enterprise Company, Sandwich, Ill., are manufacturing this Pump, which was described in a recent issue. The list price of the Pump is \$10, which is subject to a discount of 40 per cent. to the trade.

Self-Locking Gate and Door Hook.—Covert's Saddlery Works, Farmer, N. Y., are manufacturing this article. It is sold

to the trade at \$4.37 per gross for 4 inch, and \$5.83 per gross for 6 inch. The Hook was described in our last issue.

Carpet Stretcher and Tack Holder.—A description of this article appeared several weeks since. It is being introduced by Wm. Vogel & Bros., 37-47 South Ninth street, Brooklyn, as selling agents for H. Clayton & Co. The Carpet Stretcher is sold to the trade at \$2 per dozen.

Lightning Dasher Egg Beater.—This article is sold to the trade at \$4 per dozen. It is manufactured by the Lightning Dasher Egg Beater Company, Toledo, Ohio, and was illustrated in our last issue.

Drawer Pulls.—The line of Sheet-Metal Drawer Pulls manufactured by Sargent & Co., New York, an illustration of which appears in this issue, are packed with Screws, and sold from the following list, which is subject to a discount of 60 per cent.:

Per gross.

No. 2426, Boston Finish.....	\$12.00
No. Y 2426, Yeddo Bronzed.....	15.50
No. 2427 P, Highly Polished Bronze Metal.....	28.00

Cordage.—Notwithstanding the collapse of the National Cordage Company there is very little change to note in the Cordage market. Whatever may be the outcome of the National Cordage Company's affairs, it is thought by well-informed parties that lower prices will not be the result, inasmuch as it has been recognized for some time that they have been selling at a loss, giving their attention, it is thought by many, principally to manipulations of the stock market, which proved so disastrous to their interests. Under proper business management, it is thought that the price of Cordage, especially in view of the condition of the Hemp market, must be higher. What the outcome of the present somewhat complicated condition of things will be is uncertain, as it is thought by some that the National Cordage Company will attempt to carry out their projects, while others regard this as improbable and suppose that the organization will go to pieces. The fact appears to be that the company attempted too much in their efforts to establish a monopoly in the manufacture of Cordage, while at the same time they endeavored unsuccessfully to obtain control of the Hemp market. Their failure in both of these regards, together with their attempts to float the company's stock, is regarded as the cause of their downfall. The plants of many of the manufacturers are undoubtedly antiquated, old methods of making Rope having been superseded by new and improved machinery. Precisely what John Good's position in the market will be remains to be seen, but there appears to be little doubt that he will occupy an exceedingly influential position, and it is thought not unlikely that he will be a controlling factor in Cordage interests.

Wrought-Iron Pipe.—The Wrought-Iron Pipe market continues, as it has been for some time, in an unsatisfactory condition, owing to the low and irregular prices which are prevailing. The somewhat advanced list of prices which were adopted

by the manufacturers April 13 are regularly maintained. The discounts remain about as before. The revised list of April 13 is given below:

Butt-Welded.									
Inside diameter.	1/2	3/4	1	1 1/4	1 1/2	2	3	4	6
Inch.....	1/2	3/4	1	1 1/4	1 1/2	2	3	4	6
Black.....	\$0.04	.04	.04 1/2	.06	.07 1/2	.11	.14 1/2	.19	
Galv.....	.05	.05	.05 1/2	.08	.10	.14	.19		
Lap-Welded.									
Inside diameter.	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	6
Inch.....	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	6
Black.....	\$0.24	.33	.50	.64	.76	.90	1.06	1.28	1.65
Galv.....	.28	.38	.57	.70	.90	1.05	1.31	1.60	2.00
Inside diameter.	7	8	9	10	11	12	13	14	15
Inch.....	7	8	9	10	11	12	13	14	15
Black.....	2.10	2.75	3.75	4.75	6.00	7.00	8.0	9.50	11.00

It is understood that manufacturers are conferring as to measures by which the market may be put in a better condition and more remunerative prices secured.

Chisels.—The Chisel market has been for some time in an unsatisfactory condition, the prices ruling leaving narrow margins for the manufacturers, and during the past few weeks some exceptionally low quotations have been made. In order to put this line of goods in a more satisfactory condition the manufacturers have recently been conferring, and a meeting was held last week at which the principal houses in this line were represented. No action was taken with reference to prices, but there was a thorough discussion of the situation, and the desirability of some agreement was recognized. Another meeting is to be held this week, when the matter will receive further attention and perhaps some action taken. Among the firms represented at the last meeting were the Peck, Stow & Wilcox Company, James Swan, C. E. Jennings & Co., New Haven Edge Tool Company, G. I. Mix & Co., Ohio Tool Company, Winsted Edge Tool Company and Sag Harbor Tool Company.

Bolts.—The improved condition in Common Carriage Bolts, to which we have recently referred, continues, and prices, while somewhat uneven, are on the whole well maintained. Nearly all the factories are full of orders which they are in many cases unable to fill with sufficient promptness to meet the requirements of their customers.

A meeting of the manufacturers of Machine Bolts, Bolt Ends, &c., was held last week in Cleveland, most of the leading houses being represented. The market on the whole was reported as in excellent condition so far as the demand is concerned, but with prices unreasonably low. Without making any formal change in quotations a firmer feeling is the result of the meeting and some extremely low quotations have been withdrawn.

Glass.—Nothing has transpired during the past week of especial interest in the Glass trade. Prices remain firm and unchanged, owing to the influence of the Glass associations. Jobbers who are not members of the National Window Glass Company are not disposed to cut prices, as consumers and dealers seem to have accepted the National prices as the ruling ones. The factories report themselves busy, but from the comparatively light demand for Glass from dealers it would appear that factories are working on contracts yet unfilled. The cold, rainy

weather of the past two weeks has lessened the immediate requirements of the trade, while the extreme weather of the past winter and the backward spring have delayed building projects, so that the demand for Glass for new work may not come until later in the season. Collections are reported as being slow. No official announcement has been made as to the results of the meeting of the Executive Committee of the National Window Glass Company in Chicago during the past week. It is understood, however, that there is a movement on foot to revise the long list of prices, and that the new schedule will be established upon a higher basis than the present one. The scale of prices for next season's fire, the necessity of a larger number of apprentices in Glass factories from which to draw blowers to supply the demand for experienced workmen, and the time at which the factories shall stop work for the summer rest, are questions which require immediate attention. Plate Glass remains unchanged in price, though the demand has been somewhat lessened by the bad weather. The National Glass Company are working quietly, perfecting their organization among Plate Glass manufacturers. Prices on Glass remain unchanged, as follows: American Window Glass, 2000 boxes at one time, 80 and 10 and 10 per cent. discount; carloads, 400 boxes, 80 and 15 per cent. discount; less quantities than carloads, 80 and 10 per cent. discount. Freight allowed on car lots and over, not to exceed 17 1/2 cents per 100 pounds; less than car lots, f.o.b. at shipping point. French Window Glass, 75 and 10 and 5 per cent. discount. American Plate ranges in price from 50 and 10 and 7 1/2 per cent. discount to 60 and 5 per cent. discount. Imported Plate Glass, 60 per cent. discount to 60 and 10 and 5 per cent. discount.

The National Convention of Retail Hardwaremen.

THE RETAIL HARDWARE DEALERS' ASSOCIATION OF PENNSYLVANIA, in view of the satisfactory working of their association, and the reasons that exist for similar organizations in other parts of the country, issue the following call to Hardware merchants to attend a national convention in Chicago in September:

The Retail Hardware Dealers' Association of Pennsylvania wishes to call the attention of the retail dealers of the United States to a call for a national convention, to be held in Chicago, Ill., about September 13, 1893. Those who are interested in the formation of a national association are requested to signify their willingness to attend by corresponding with S. S. Bryan, secretary, Titusville, Pa.

As we understand the matter, the principal object is the mutual benefit and protection of retailers against the encroachment of the jobber and manufacturer upon their legitimate trade. It is likely also that other desirable ends would be accomplished, and that an organization of the trade throughout the country might be of such a character as to be decidedly advantageous.

The Hardware Club.

A MEETING of the governors of the Hardware Club was held May 5 at the office of William H. Williams, the president. The following persons had made application for membership and were duly elected:

ALBERT J. BARNES,
102 Chambers street, New York.
GEORGE G. BLAKESLEE,
Waterbury, Conn.
J. HOWARD COWPERTHWAIT,
195 Park Row, New York.
HENRY L. DYER,
Times Building, New York.
FREDERICK A. FARLEY,
65 Reade street, New York.
JAMES B. FORD,
80 and 82 Reade street, New York.
ALBERT H. GLEASON,
265 Broadway, New York.
GILBERT E. JONES,
Times Building, New York.
HENRY SAMPSON,
58 Reade street, New York.
THOMAS ALFRED VERNON,
65 Duane street, New York.
WILLIAM K. WILSON,
72 Reade street, New York.

Careful attention was given by the governors to the affairs of the club, which are in an eminently satisfactory condition. The committee on rooms reported the conclusion of the negotiations with the Postal Telegraph Company, securing for a term of years for the use of the club the premises we have already described, on the corner of Broadway and Murray street. The following committees were appointed:

HOUSE COMMITTEE.

PETER MCCARTEE, Chairman.
J. L. VARICK.
E. C. VAN GLAHN.
EUGENE BISSELL.
W. H. WILLIAMS, *ex officio*.

FINANCE COMMITTEE.

W. R. WALKLEY.
M. C. OGDEN.
BRACE HAYDEN.
THOMAS F. KEATING, *ex officio*.

Official Report of the Tests of Cut and Wire Nails.

FOR SEVERAL REASONS there has been a good deal of delay in the publication of the results of the tests as to the relative holding powers of Cut and Wire Nails, which were made in December and January at the United States Arsenal, Watertown, Mass. Regarding these tests the following synopsis of the report gives in a general way the results of the tests, from which it will be seen that Cut Nails in every case were found to have greater holding power than the Wire Nails, the percentages with reference to the different kinds and sizes of Nails being also given:

CAMBRIDGE, MASS., March 30, 1893.

To Messrs. Charles L. Bailey, President of Chesapeake Nail Works, Harrisburg, Pa.; Arthur B. Clarke, President of Old Dominion Iron & Nail Works Company, Richmond, Va.; Horace P. Tobey, Treasurer of Tremont Nail Company, West Wareham, Mass.

GENTLEMEN.—At your request, I have examined, summarized and computed percentages upon the report of Major J. W. Reilly of the United States Ordnance Department, giving in detail the tests

made for ascertaining the relative holding powers of Cut Nails and Wire Nails, of equal lengths and weights, which tests were made at the United States Arsenal, at Watertown, Mass., under the supervision of Major Reilly, in accordance with an invitation of the Eastern Cut-Nail manufacturers of the United States to the Wire-Nail manufacturers of the United States, dated November 4, 1892. The tests were made in November and December, 1892, and January, 1893.

I find results as follows:

The series of tests, each series comprising 10 pairs of Cut Nails and Wire Nails of one size, were in number.....58
The number of Nails tested was.....1160
The Nails ranged in length from...1½ to 6 in.
The number of series in which the Cut Nails showed the superior holding power was...58
The number of series in which the Wire Nails showed the superior holding power was.....Not any
All the Nails tested were driven in

Spruce wood
Additional tests were made, of the Box Nails only, in.....Pine wood
In Spruce wood, in nine series of tests, comprising nine sizes of Common Nails (longest 6 inches, shortest 1½ inches), the Cut Nails showed an average superiority of

47.5 per cent.
In Spruce wood, in six series of tests, comprising six sizes of Light Common Nails (longest 6 inches, shortest 1½ inches), the Cut Nails showed an average superiority of

47.40 per cent.
In Spruce wood, in 15 series of tests, comprising 15 sizes of Finishing Nails (longest 4 inches, shortest 1½ inches), the Cut Nails showed an average superiority of

72.22 per cent.
In Spruce wood, in six series of tests, comprising six sizes of Box Nails (longest 4 inches, shortest 1½ inches), the Cut Nails showed an average superiority of

58.88 per cent.
In Spruce wood, in four series of tests, comprising four sizes of Floor Nails (longest 4 inches, shortest 2 inches), the Cut Nails showed an average superiority of

80.03 per cent.
In Spruce wood, in above 40 series of tests, comprising 40 sizes of Nails (longest 6 inches, shortest 1½ inches), the Cut Nail showed an average superiority of

60.50 per cent.
In Pine wood, in six series of tests, comprising six sizes of Box Nails (longest 4 inches, shortest 1½ inches), driven with a taper perpendicular to grain of wood, the Cut Nail showed an average superiority of

135.20 per cent.
In Pine wood, in six series of tests, comprising six sizes of Box Nails (longest 4 inches, shortest 1½ inches), driven with taper parallel to grain of wood, the Cut Nail showed average superiority of.....100.23 per cent.

In Pine wood, in six series of tests, comprising six sizes of Box Nails (longest 4 inches, shortest 1½ inches), driven in end of wood, the Cut Nail showed an average superiority of.....64.38 per cent.

In Pine wood, in above-named 18 series of tests, comprising six sizes of Box Nails (longest 4 inches, shortest 1½ inches), driven in three ways, the Cut Nail showed an average superiority of.....99.93 per cent.

In Spruce and Pine wood combined, in the whole 58 series of tests, comprising 40 sizes of Nails (longest 6 inches, shortest 1½ inches), the Cut Nails showed average superiority of.....72.74 per cent.

Yours respectfully,

WM. H. BURR, Consulting Engr.

Referring to the above report, the committee in charge of the tests address the manufacturers of Cut and Wire Nails in the United States as follows:

GENTLEMEN.—We have the honor of presenting hereunder the results of the challenge tests, computed and arranged by Consulting Engineer Wm. H. Burr, from the detailed official report of Commanding Officer J. W. Reilly, Major, Ordnance Department U. S. A., in command of the United States Arsenal at Watertown, Mass., and of the United States Testing Machine at that station.

The report of Major Reilly gives the action, under stress, of each one of the Nails (1160 in number) tested in the trials; but it is embodied in 52 manuscript pages; and in accordance with the custom of the testing department, it does not give the groupings, general summaries and per-

centages, which are necessary for concise presentation and quick comprehension of the results. In order to obtain these we handed Major Reilly's report to Mr. Burr, who is doubtless known to most of the Nail manufacturers, through his professional reputation and published works, and also as the occupant of a prominent professorship of engineering.

We preserve the report of Major Reilly for any examination or comparison that may be called for. The said report is made from the original entries, preserved in the record books of the testing department of the United States Arsenal at Watertown, Mass.

Yours respectfully,

CHARLES L. BAILEY,
ARTHUR B. CLARKE, } Committee.
HORACE P. TOBEY.

Shepard Hardware Company's Plant Destroyed by Fire.

THE WORKS of the Shepard Hardware Company, at Buffalo, N. Y., were entirely destroyed by fire on the night of May 8. The fire broke out at 7 o'clock in the north end of the company's main building, which was a very large one, being 550 feet long, 60 feet high and 262 feet wide, covering about 3½ acres of ground. The fire department responded promptly, but when it arrived the whole structure was a mass of flame and the intensity of the heat was such that it was almost impossible to approach the building. The offices of the company were located in another building, which also took fire; but, owing to the energetic efforts of the firemen, this building was not destroyed, and few if any of the company's important papers were burned. The main building was valued at \$50,000 and was insured for \$35,000. The loss on the contents, including machinery, patterns and stock, will, it is thought, reach \$200,000, on which an insurance of \$140,000 was carried. By the destruction of the factory over 400 men are thrown out of employment. The weekly pay-roll was more than \$4000.

Worthless Goods.

A WELL-KNOWN Southern house have written us concerning some goods which they refer to as utterly worthless, and which they were obliged to return to the manufacturers. We lay their letter before our readers, as it is not unlikely that some of them have had similar experiences, and as the whole matter illustrates the desirability of buying from houses of recognized standing:

Some time ago we bought from . . . some rubber carriage cloth. It proved utterly worthless. We returned it to them, but, unfortunately, we had paid them for it, and they have refused to make us any allowance whatever on same. They claim that the goods were O. K., but if this were even granted to be the case they should then be willing to take them off our hands. The cloth was rotten and utterly worthless, however, and the very worst goods of the kind that we have ever had in our house. We think that such fraudulent transactions as these should be made public.

GEO. H. ISMON, sales agent for Salem Wire Nail Company, Falcon Iron & Nail Company, and Union Iron & Steel Company, has removed from 54 Warren street, New York, to room 28, 277 Broadway, where all inquiries and orders for the Eastern territory should be addressed to him.

Trade Items.

W. H. SILLS, 86 Lake street, Chicago, dealer in Mica, is distributing as souvenirs to the trade very pretty glass paper weights with views of the World's Fair buildings in colors. They are really artistic, and will be highly appreciated by all who receive them.

THE CHICAGO AUTOMATIC SCALE COMPANY, Chicago, now have their down-town office in room 316, Chamber of Commerce, instead of on the second floor, as heretofore.

THE CHICAGO STAMPING COMPANY are now occupying new and commodious quarters, corner Congress and Green streets.

THE NUBIAN IRON ENAMEL COMPANY of Cragin, Ill., have been favored by the management of the World's Fair with a good order for Nubian to use on all the smoke stacks on the grounds. The company recommend it specially for such work as this, where metallic surfaces are exposed to the weather, while it is equally adapted to coating grates, stove pipe and other interior fixtures.

C. E. JENNINGS & Co., 79 Reade street New York, it will be observed, call attention in their advertisement to the fact that they can now furnish promptly their new improved Jennings-Steers' Perfected Expansive Bit, which they claim will not creep.

JAMES S. BARRON & Co., 141-145 Chambers street, New York, report an excellent trade, both domestic and foreign, which a survey of their shipping room and sidewalk substantiates. A glance through their book containing nothing but export orders revealed the names of a very large number of exporters to all quarters of the globe, a large proportion of which would be recognized by those in the trade as among the best in New York. This house deal largely as manufacturers and jobbers in Rope, Cord, Twine, Wicking, Brooms, Brushes, &c., together with a large assortment of Wooden and Willow Ware and House-Furnishing Goods. The recent remodeling of their sample and shipping room and office has greatly increased their facilities.

THE ALLERTON-CLARKE COMPANY of 83 Reade street, New York, now represent the following concerns: The Arcade File Works, Norwich Lock Company, Warner Mfg. Company, Harrisburg Handle Company, and Peterson Level Company of Marinette, Wis. They have added four more salesmen to their traveling force, who will canvass New England, New York, Pennsylvania and Ohio. H. S. Brooke, who is well-known to the local trade in New York City and vicinity, has just connected himself with this company and will represent them hereafter in this territory.

VAN WAGONER & WILLIAMS Co., 14 Warren street, New York, having found their quarters inadequate at the above address, commencing May 1 have leased the loft above the one they have been occupying, which, they trust, will be sufficient for their needs. This will permit them to carry a larger and more complete stock and supply promptly requisitions made on them by the trade in New York and vicinity, thus accommodating customers who cannot wait for direct shipments from Cleveland; also such orders as are not large enough to ship alone from the factory.

IN A NEAT CIRCULAR J. H. Williams & Co., Brooklyn, N. Y., manufacturers of Drop Forgings, announce that their exhibit at the World's Columbian Exposition will be found in section C of boiler-house extension to Machinery Hall. A full line of their standard products, as shown in their catalogue, together with a variety of special Drop Forgings of all kinds, will be in charge of their traveler, D. E. MacCarthy.

SILVER & Co. announce the removal on May 1 of their office and factory to 304-310 Hewes street, Brooklyn, N. Y. Their New York sample and sales room will be located at 20 Warren street. The increase in the demand for their kitchen furnishing goods and household inventions made it necessary for them to change their location. They state that they now have a complete manufacturing plant, especially arranged for making their various specialties.

H. S. OWEN MFG. COMPANY, Washington, D. C., advise us that they have purchased all interests in the Capital Cycle Company's stock, fixtures and good will; also all interests in the Washington Cycle Company. Business will be continued by them with office and salesrooms at 1423 New York avenue, Washington, D. C.

WE ARE ADVISED by the Bucher & Gibbs Plow Company that their exhibit at the World's Fair will be in the Agriculture Department Annex, space 140 E, Post L. 10. The exhibit will be displayed upon an antique oak hexagon pyramid, 12½ feet at the base, 7 feet high, having three shelves to each face. A 7-foot pedestal will be surmounted by a plow attended by the "old man and agent"—(trade-mark cartoon)—life size, in wax, and will revolve by electric power. Among other interesting features is a wooden moldboard plow made in 1776.

P. L. HARGETT & Co., Frederick, Md., announce in a circular to the trade a Columbian Charity Sale, to take place on or about June 10, 1893, in the streets of Frederick. The names of contributors, it is stated, will be marked upon the goods, and the amount resulting from the sale is to be devoted entirely to charitable and benevolent purposes.

ORR & LOCKETT HARDWARE COMPANY, Chicago, have removed from their former location, 184 and 186 Clark street, to more commodious quarters at the northwest corner of State and Randolph streets, 50 State street and 71 Randolph street.

H. MUELLER GUN COMPANY, Decatur, Ill., have a handsomely fitted and conveniently arranged store for the display and sale of Guns, Cutlery, Base Ball Clothing and Supplies, Bicycles, Athletic Goods and Sporting Goods in general. Deep cases, with sash to raise, occupy one side of the first floor, where a large line of Guns is displayed. The other side of the room is devoted to large showcases on tables, behind which the shelving extends to the ceiling. The arrangement of the room impresses one favorably, giving the idea of a well-stocked store, with the entire absence of any crowding of goods.

THE GRAND CROSSING TACK COMPANY, Grand Crossing, Ill., advise us that they are introducing their Claw-Handle Carpet Tacks into the English market, having just made a shipment to a prominent London house.

AT THE JANUARY, 1893, session of the Connecticut Legislature, the Peck, Stow & Wilcox Company of Southington, Conn., were granted the authority under suitable restrictions to reduce their capital stock from time to time to any amount not less than \$1,000,000, it now being \$1,500,000. The law thus amending the company's charter provides that the act shall not be valid unless accepted by the majority vote of the stock represented at a meeting of their stockholders duly named and held for the purpose of acting on the same; said meeting to be held within six months from and after the passage of the act.

A SPECIAL TRADE SALE of Cutlery is announced by Haydock & Bissell, 12 Murray street and 15 Park place, New York, among the Special Notices in this issue, the time of the sale being Tuesday and Wednesday, May 16 and 17. The sale will comprise several thousand dozen of Table Knives and Forks, Pocket Knives, Carvers, Butcher Knives, Silver-Plated Tea and Table Spoons, Nickel-Plated

Shears and Scissors, &c. It will also include 100 gross first-quality Table Knives and Forks. This is referred to as the last sale of Cutlery for the spring of 1893 and is worthy the attention of Cutlery buyers.

THE AMERICAN HONE COMPANY, Minneapolis, Minn., after thoroughly satisfying themselves as to the quality of the American Water Hone, are manufacturing these goods and offering them to the trade. The company claim for these stones a uniform grit, perfectly clean cutting, that they will not overhone, and upon which a wire edge cannot be produced. They remark that the Hone would be of little value to those wanting a saw edge on a razor, as it will only produce a fine edge. Each stone is stamped with the makers' name and guarantee, and the goods are put upon the market in competition with expensive imported Hones.

RUSSELL & ERWIN MFG. COMPANY, New Britain, Conn., and New York, have a large and complete exhibit of their products at the World's Columbian Exposition in section Q 99, Manufactures Building, and cordially invite the inspection of the trade of their display of Builders' Hardware and Art Metal work in Bronze and Steel, including Wrought Steel Door Locks, and also of Screws and Bolts with helicoid shanks.

LUFKIN RULE COMPANY, Saginaw, Mich., have engaged as their direct representative C. M. Avery, who is well and favorably known in the jobbing Hardware trade. The company advise us that their new line of high quality Reliable and Rival Steel Measuring Tapes are meeting with a favorable reception at the hands of the trade, as evidenced by increased orders for the goods.

SIDNEY SHEPARD & Co., Buffalo, N. Y., desire us to state that the unfortunate fire which, on the night of the 8th inst., destroyed the works of the Shepard Hardware Company of that city in no wise affected their plant or business, the works of the former company being situated entirely separate from those of the latter company.

Manufacturing.

THE PLANT of the Winsted Edge Tool Works, West Winsted, Conn., was slightly damaged by fire on the 30th ult. The loss suffered was only about \$250, and the fire involved no delay whatever in the filling of orders.

The Star Mfg. Company, Canton, Ohio, have been organized, with John A. Brobst as president and Frank H. Wagner as secretary and treasurer, the directors being John A. Brobst, Frank H. Wagner, F. B. Smith, Louis Wagner and C. C. Bow. The company will manufacture Hardware specialties, but for the present will confine their attention to the manufacture of the Crystal Valve Oil Can. In the near future they expect to erect a glass works in connection with their plant, as they will require considerable glass in the manufacture of this Oil Can. The company hope to commence operations about May 15.

The Covington Brass Mfg. Company is the name of a newly incorporated firm having a capital stock of \$150,000, with M. E. Duncan president and Isaac Kinsey vice-president and general manager. The new company occupy the plant formerly operated by the American Wire Nail Company, Fourteenth and Washington streets, Covington, Ky. Special attention will be given to the production of high-grade Brass Goods, Carriage Hardware and other specialties, among which is an Automatic Fire Alarm Signal. Additions are to be made to the present buildings at once.

Unity Door Check Company, Chicago, on account of their increasing business have moved into more commodious quarters at 234 Lake street, where they will be better able to serve the trade.

Charles Merrill.

CHARLES MERRILL, whose death was announced in a recent issue, was probably at the time of his decease the oldest Hardwareman in New York. He was born in Hartford, Conn., August 3, 1800. Coming to this city in 1813, he began his commercial career with what was then L. & T. Seymour, a house which was subsequently known as W. N. Seymour & Co., to whom White, Van Glahn & Co. are successors, at that time as now located at Chatham square. Mr. Merrill as a lad used to bring goods purchased of importers and jobbers, then located largely in Pearl street below Fulton, in a hand cart, which in those days was the more common method of conveying goods. In 1824 Mr. Merrill started for himself, establishing a hardware business at 556 Grand street, corner of Lewis, which is still conducted by his youngest son, Henry W. Merrill. The venture prospering, he was led to erect the present brick building in 1835, using the lower portion for business purposes and the upper part as a residence, where he lived until about 12 years ago. This building, which has not been altered except to add an extension, was the wonder of that portion of the town at the time, and many were the predictions of the folly of putting up such a structure there. In 1861 he established, with the assistance of his two eldest sons, a drop hammer manufactory in First street (now Kent avenue), Brooklyn, E. D., near Broadway ferry, which is still in operation. Among Mr. Merrill's contemporaries were Peter Cooper, from whom he purchased many goods, and Seth Peck, whose name is now the first in the corporation of Peck, Stow & Wilcox Company. Mr. Peck used to come to the city away back in the thirties with his samples of Hardware in a carpet bag and Mr. Merrill selected a quarter or half a dozen of the various articles, according to his wants. In the days of the old State banks he acquired a local reputation for his familiarity with the bills on the different banks in far away States, it being said that his neighbors for a quarter of a mile around would often not accept a five dollar note until he had passed judgment on it. James White of W. N. Seymour & Co., who were succeeded by White, Van Glahn & Co., came direct from the country to Charles Merrill's store, where he learned the Hardware business.

Among those who have commenced their business life in Mr. Merrill's store and have since attained prominence in the trade may be mentioned W. F. Hyatt of Hyatt & Spencer, long at 58 Beekman street, but with several intervening

changes of style now known as Underhill, Clinch & Co., in Chambers street. Mr. Hyatt withdrew from the old concern years ago and is now identified with the Brass Goods Mfg. Company. Others are Moses R. Whitney of Benham & Whitney, at 272 Pearl street, afterward Benham & Stoutenborough; John Eaton, now president of the Eaton, Cole & Burnham Company.

Mr. Merrill was connected with the Society for Improving the Condition of the Poor, and for several years was a member of No. 31 Hose Company of the Volunteer Fire Department. He was prominently connected with the Seventh Presbyterian church, corner Broome and Ridge steets, New York, where he held the office of trustee and elder for over 60 years. The funeral services were conducted by Rev. T. Ralston Smith, whose



CHARLES MERRILL.

call Mr. Merrill signed over 40 years ago. Four daughters and three sons survive him.

Export Notes.

A. GUNTHER, now head of the export house of Theile & Quack, 7 Bridge street, New York, arrived recently from Havana on the steamer "Yucatan." After getting the New York branch thoroughly established last fall he made a trip to Cuba, remaining there about four months, having spent six months last year in other South American countries. He reports the volume of trade very large, but done on a small margin. It will be remembered that this concern has been established over 40 years, the main house being at Elberfeld, Germany, with branches at Montreal, New York, and in several South American countries. While in Cuba he secured articles that, in his judgment, could be profitably made by manufacturers here, and on bringing them to their attention they expressed surprise that they had not

known of them before, readily agreeing to produce any such goods as were likely to sell profitably. It is his intention gradually to bring leading articles now produced abroad to the attention of those in a position to make them here. In speaking of the proportion of export trade done by the United States and other countries, in manufactured goods only, such as Machinery, Tools, Hardware, Textiles, &c., Mr. Gunther remarked that, in his opinion, the proportions were approximately as follows: United Kingdom, 80 per cent., with the remaining 20 per cent. divided between Germany, France and the United States, the latter getting about 5 per cent. Considering his 15 years' experience in soliciting orders in the Greater and Lesser Antilles, Mexico and the Central American countries, together with Venezuela, United States of Colombia and Bolivia, his opinions, based upon careful observation, should carry weight with them.

SHIPPING, ETC.

Referring to failures in complying with explicit instructions as to packing, shipping, &c., of goods for export a merchant instances several orders taken for Iron Pipe in 16 and 18 foot lengths. Manufacturers, in spite of assurances from agents when orders were accepted that the desired sizes would be sent, filled the indents with 22 to 26 and 28 foot lengths, thereby giving much trouble to the purchasers. Their store-houses in the majority of cases will permit of certain lengths of pipe being stood up on end, each size separated from the others, the sizes running in regular order.

When an order is to be executed the various diameters can be got at expeditiously, if the lengths permit of their being placed as provided for. When long lengths are received they must be laid on the floor or left in the street, and the confusion and annoyance can be imagined, but not so execrations in Spanish. In another case a quantity of 5-inch Wrought Iron Pipe was ordered with accompanying flanges. Instead of packing the flanges in boxes or barrels they were loosely screwed on to the ends of the pipe; consequently in loading and stowing cargo aboard the steamer many were broken. Multitudes of these cases occur and are well known to all experienced export houses and are a perpetual vexation to them. These are selected merely as types to illustrate the necessity of following emphatic directions, which have been prepared invariably with much care. Any reputable export house or forwarder will accept any responsibilities that may arise if orders are complied with, and are willing to liquidate any reasonable extra charge where such expense is incurred, as

by so doing many customs dues are saved, many fines and etceteras avoided. Our English, German, and French competitors have long since succeeded in mastering the intricacies inseparable from successful trade with foreign houses.

It is reported that Mexico has imposed an export duty on Sisal Hemp, to take effect July 1 next. The duty will amount to about one-third of a cent per pound.

James Martin of James Martin & Co., importers of Hardware, &c., at Sydney, New South Wales, has arrived in this country. He is a special Commissioner from this Australian colony to examine into and report on the industries of the United States applicable to that colony. While here he will make his headquarters with the well-known export house of R. W. Forbes & Son, 14 South William street, New York.

C. E. Geard of Geard & Co., Port Elizabeth, South Africa, is due in New York on the steamer "Berlin" of the American Line May 8. He will see both the World's Fair and many American manufacturers before returning. We are told his house is the largest in the Hardware and kindred lines in Port Elizabeth.

American manufacturers often do not understand why illustrated catalogues sent abroad do not produce better results in the matter of orders. Many foreign buyers have been used to English goods and have seen them represented in catalogues and trade papers of that country. Any one who is familiar with the matter knows our friends on the other side do not go the expense of illustrating their wares that Americans often do. Hence, while English goods are often not justly depicted, ours, by the engraver, are given their full share of attractiveness. A salesman for a New York house who travels in Australia and other countries, not long ago in Sydney, solicited an order for Tinware through the medium of an illustrated catalogue. He represented several different lines of trade, most of which he carried samples of, although he had none of this particular class of goods. Another agent of a New York house being there at the same time secured the order at 10 per cent. advance and our informant suspected for the same manufacturers' goods, simply because the purchaser could see samples of what he was buying. The deduction is that more trade can be got by showing goods than pictures, although the catalogues are all right in their way, especially for any orders after the first.

Exports from the United States to the Spanish West Indies (Cuba mainly) have increased 54 per cent. in the last year, the greater portion since July 10 last.

In his last report Consul Dimmick at Barbados says that American Hardware is coming into much request in that island. He suggests that American advertisers would reap greater advantages in the West India colonies if they would plainly name their prices and terms, as English firms do, instead of leaving would-be purchasers in doubt. The Consul says

these people will not send for information. It must be sent to them.

Prize Competitions

\$25.00.

Prize Competition No. 24.

SUBJECT:

Short Methods of Figuring Discounts.

Merchants may be assumed to be able to arrive accurately at the cost of an article, list and discount being given, but not all are familiar with the shorter methods by which results may be quickly arrived at and more complicated questions in discounts be solved. This competition is designed to draw out a description of short methods of figuring discounts. Among the subjects which may be touched upon are the following:

Finding the net cost, list and discount being given;

Finding the percentage of profit, net cost and selling price being given;

Finding out at what price goods should be sold to secure a certain percentage of profit;

The extent to which it is practicable to use a single discount which is equivalent to two or more discounts.

Other matters will naturally occur to those entering this competition and we shall be glad to have any information on this subject which will be of service to the trade.

This competition will remain open until June 3, 1898.

The following prizes will be awarded:

First prize	\$12.50
Second prize	7.50
Third prize	5.00

The prizes will be awarded for answers which, in the judgment of the committee of award, are most suitable for publication and of the most general interest.

We reserve the privilege of extending the time on any competition in case the contributions received are not of sufficient number or merit for the committee to award prizes. These competitions are open to every one, and it is hoped that there will be a general response from business men. We shall have the privilege of publishing any or all of the contributions received.

Replies are to be received not later than June 3, 1898. They should be addressed as follows:

DAVID WILLIAMS,
96-102 Reade street,
New York.

Prize Competition No. 24.

The Competitions which have closed are now in the hands of the Committees of Award, who are giving careful attention to the claims of the different contributions. From the number of these and the evident merit of not a few of them, we are assured that a great deal of valuable information and suggestion will be put at the disposal of the trade.

The Weekly Prize Competitions noted below are now before our readers and remain open until the dates named:

No. 21. Closing May 13.

The Safety Line in Credit Business.

No. 22. Closing May 20.

The Best Manner of Presenting and Collecting Book Accounts.

No. 23. Closing May 27.

Three or more Subjects for Prize Competition.

No. 24. Closing June 3.

Short Methods of Figuring Discounts.

Another subject will be announced in our next issue.

It Is Reported—

That Bertram & Marshall succeed L. F. Bertram & Co., dealers in Hardware, Scottville, Mich.

That Chas. A. Prieks has succeeded L. Schneider in the Hardware and Stove business at Fraser, Mich.

That Erickson & Emmons, Hardware merchants, Ironwood, Mich., have dissolved. Carl E. Erickson will continue the business.

That C. A. Fuller has sold out his Hardware business at Orion, Mich., to James R. Stead.

That the Hardware store of Schnell & Bailey, Wonewoc, Wis., was destroyed by fire on the 28th ult.

That Collins & Lamp at Zanesville, Ohio, have recently commenced the re-tailing of Stoves, Hardware and Tin.

That the Hardware and Implement firm of Moe & Weaver at Junction City, Ore., has been dissolved. Mr. Weaver will continue the business.

That J. A. Montgomery is now carrying on the Hardware and Stove business formerly conducted under the firm name of Montgomery & Albright, Wallula, Wash.

That D. Mosher, dealer in Hardware, Stoves and Tinware, Cameron, Wis., has disposed of his business to Frederickson & Burton.

That Wm. Thompson, dealer in Hardware, Hills, Minn., has been succeeded by Thompson & Fritz.

That G. A. McIntosh, dealer in Hardware, Stoves and Tinware, Anacortes, Wash., is removing to Fairhaven.

That O. D. Collins will engage in the Hardware business at Harrisville, N. Y. He is erecting a building 26 x 80 feet.

That Mr. Netcher will engage in the Hardware business at Alverton, Ohio.

That the Stratman Hardware and Builders' Supply Company have been organized at Huntington, Ind., with a capital of \$12,000. The directors are Adam Stratman, Philip Partenheimer, Ernst J. Blenker, C. W. Schwartz and A. H. Koerner.

That the Hardware store of E. B. Lobock, Denver, Col., was burglarized on the 24th ult. A quantity of Cutlery was secured by the thieves.

That the Hardware firm of Hankins & Hick, Colusa, Cal., have dissolved. C. C. Hick will continue the business.

That Phelps & Brown are a new Hardware firm at Ansonia, Conn.

That J. T. Prowitt & Co. have recently entered the Hardware business at South Norwalk, Conn.

That A. Wasmuth & Son have succeeded Windle & Wasmuth in the Hardware and Stove business at Roanoke, Ind.

That the Amesbury Hardware Company and N. S. Hoyt are new Hardware firms at Amesbury, Mass.

That Kendall & Higgins, Waltham, Mass., have disposed of their Hardware business to J. A. Higgins.

That M. F. Jarboe & Co. are a new firm at Lonaconing, Md. They are carrying on the Hardware and Saddlery business formerly conducted by J. W. Dean.

That J. F. Jones of Hoosick, N. Y., and J. E. Walbridge of Bennington, Vt., have formed a partnership at the latter place and will engage in the sale of Stoves, Tin, Hardware, &c.

That Earl Bros. are a new Hardware firm at Ogdensburg, N. Y.

That Carnine & Morris are successors to Carnine & Small Bros. in the Hardware business at Buckley, Wash.

That R. G. Martin, dealer in Hardware, Stoves and Tinware, Monroeville, Ohio, has been continuously in business since April 4, 1860.

Price-Lists, Circulars, &c.

W. N. WYETH'S SONS, Baltimore, Md.: Iron, Steel and Nails, Boiler Makers' and Blacksmiths' Supplies in general. This company issue the first edition of their stock-list in pamphlet form, which will be revised monthly. A monthly copy of the list will be sent by the company to firms who will furnish their name and address.

THE DEMING COMPANY, Salem, Ohio: Spray Pumps and Nozzles, Knapsack Sprayers, Spraying Appliances, Barrel Carts, &c. In a catalogue devoted to these goods attention is called to the fact that the company have this season brought out several new Spray Pumps, Nozzles, Spraying Appliances; also Bucket and Barrel Spray Pumps.

WILLIAM FRANKFURTH HARDWARE COMPANY, Milwaukee, Wis.: Fishing Tackle and Cutlery. A price current of 58 pages illustrates Fishing Rods, Reels, Hooks, Bass and Trout Flies, Trolling Baits, Rubber Bait, Lines, Fly Hooks, Spears, Rowboats, Seines, Nets, Hammocks, Scissors, Shears, Pocket Knives, Razors, &c.

ST. LOUIS STAMPING COMPANY, St. Louis, Mo.: New goods. A circular under date April, 1893, illustrates with prices a line of Royal goods, including Tea Kettles, Covered Seamless Sauce Pans, Covered Seamless Kettles, Covered Seamless Sauce Pots, Straight-Seamed Buckets and Bed Pan; all of Granite Ware.

SIMMONS HARDWARE COMPANY, St. Louis, Mo.: Bicycle catalogue No. 219 and circular No. 220 of Sporting Goods. Illustrations are given of Lyndhurst, Westminster and S. H. Co.'s Western Cycles, for which they are sole agents; also of Base Balls, Catchers' Gloves and Mittens, Boxing Gloves, Rackets, Lawn Tennis Court Markers, Hammocks, Folding Camp Furniture, &c.

OLDS WAGON WORKS, Fort Wayne, Ind.: Wagons. A budget of catalogues illustrate Farm Wagons, Log Trucks, Spring Wagons, Farm Carts, Road Wagons, Buggies, Park Wagon, Combination Wagon, &c.

LUTHER BOARDMAN & SON, East Hadam, Conn.: Silver-Plated and Nickel-Silver Flat Table Ware, Britannia Spoons, &c.: Their catalogue, indexed through, is devoted to the illustration and prices of Spoons, Forks, Sugar Shells, Child's Sets, Sugar Sifters, Nut Picks, Knives, &c. A specialty is made of Nickel-Silver Table ware, without plate.

JOHN STORTZ & SON, Philadelphia, Pa.: Tools and Hardware Specialties. Their 1893 illustrated catalogue and price-list is devoted to goods of their manufacture, as follows: Oyster Knives, Oyster Hardies; Butcher, Fish and Bread Knives; Butch-

ers' Steels, Cleavers, Scrapers, Butter Spades, Cabbage Corers, Ice Picks, Store and Warehouse Tools, Coopers' Tools, Upholsters' Tools, Ship Tools, Mechanics' Tools, &c. The manufacturers state that their facilities have been increased, and that they are prepared to fill orders promptly.

THE CLEVELAND NOVELTY COMPANY, Cleveland, Ohio: The Bieder Adjustable Grass Catcher. This company are sending out a metallic end hanger, illustrating in colors the Grass Catcher and its advantages.

THE LUFKIN RULE COMPANY, Saginaw, Mich.: Steel Measuring Tapes, Steel Rules, Steel Board Rules, Hickory Board and Log Rules, Boot Calks and Sets, Perfection Glass Boards, &c. Under date May, 1893, an illustrated catalogue and price-list shows these goods in a variety of styles and sizes. The goods are manufactured at the company's new factory with modern machinery, much of which is of special design for their particular work.

A. B. OLSON, Kansas City, Mo.: Corn Poppers, Peanut and Coffee Roasters. Illustrations and descriptions are given of Automatic Ejecting Rotary Corn Poppers, Poppers on Wheels, Peanut and Coffee Drums, Burners, &c.

SIDNEY SHEPARD & Co., Buffalo, N. Y.: Galvanized Ash Cans. Illustrations are given in a circular devoted to these goods of Cans for ashes or garbage, with stamped bottoms and covers, together with the same style Cans protected by eight hardwood strips. Galvanized Cans are also shown with three iron hoops.

THE D. W. BOSLEY COMPANY, Chicago, Ill.: Peerless Rubber Window Cleaners; also Rubber Floor Scrubbers and Bar Cleaners. The company state that hereafter their Window Cleaner will be made with a sheet-iron socket handle, which will not break.

ST. PAUL HARDWARE COMPANY, St. Paul, Minn.: 1893 Bicycle Catalogue. Among the wheels illustrated are the Sterling, Union P. D. Q., Diamond, Queen City, Matchless, Racer, Corker, Ideal and Dandy. A line of Velocipedes and Tricycles are also shown, together with Bells, Lanterns, Carriers, Saddles and Bicycle Sundries.

Exports.

THE EXPORTS from the port of New York of merchandise to foreign countries for the months of March and April, 1893, are given below, including Hardware, Machinery, Agricultural Implements and kindred goods. The items for Mexico do not include rail shipments, but only such goods as are carried in seagoing vessels.

AFRICA.	
Iron and Steel manufactures.....	\$150
Gunpowder.....	10,000
ARGENTINE REPUBLIC.	
Mowers and Reapers.....	\$17,855
Plows and Cultivators.....	29,826
All other Agricultural Impts. and parts.....	10,014
Brass and Brass Goods.....	4,425
Clocks.....	1,212
Castings.....	717
Firearms.....	2,105
Builders' Hdw.....	2,732
Machinery.....	14,944
Cut Nails and Spikes.....	180
Wire Nails, Horse Nails, Tacks, &c.....	955
AZORES, MADEIRA, ETC.	
Clocks.....	\$454
Builders' Hdw.....	51
Machinery.....	293
Builders' Hdw.....	\$405
Lamps.....	167
Saws and Tools.....	\$21,449
Scales and Balances.....	2,841
Steam Boilers and parts of Engines.....	1,888
Stoves, &c.....	4,580
Iron and Steel, all other manufactures.....	4,822
Lamps.....	6,726
Lead and manufactures.....	855
Plated Ware.....	4,331
Tinware.....	284
Wooden Ware.....	690
Zinc, all other manufactures.....	209
Emery Wheels.....	870
BRITISH EAST INDIES.	
Scales and Balances.....	\$77
Iron and Steel, all other mfrs.....	223
Lamps.....	9,641
Lead and mfrs.....	18
Plated Ware.....	915
Wooden Ware.....	26
BRITISH GUIANA.	
Saws and Tools.....	\$1,149
Scales and Balances.....	89
Stoves, &c.....	364
Iron and Steel, all other manufactures.....	252
Lamps.....	545
Lead and manufactures.....	144
Plated Ware.....	200
Tinware.....	45
Wooden Ware.....	30

AUSTRALIA.	
Mowers and Reapers.....	\$51,221
Plows and Cultivators.....	2,261
All other Agricultural Impts. and parts.....	39,409
Brass and Brass Goods.....	949
Clocks.....	11,481
Copper Goods.....	89
Explosives.....	4,201
Car Wheels.....	535
Castings.....	12,094
Cutlery.....	1,375
Firearms.....	6,095
Builders' Hdw.....	55,982
Machinery.....	31,567
Cut Nails and Spikes.....	347
Emery Wheels.....	414
Wire Nails, Horse Nails, Tacks, &c.....	426
AUSTRIA.	
Mowers and Reapers.....	\$7,601
Firearms.....	\$450
Machinery.....	760
BELGIUM.	
Saws and Tools.....	\$936
Scales & Balances.....	5
Steam Boilers and parts of Engines.....	30
Stoves, &c.....	654
Iron and Steel, all other manufactures.....	9,135
Lamps.....	40
Plated Ware.....	624
Tinware.....	105
Wooden Ware.....	321
Aluminium.....	250
BERMUDA.	
Cut Nails and Spikes.....	\$397
Wire Nails, Horse Nails, Tacks, &c.....	135
Saws and Tools.....	33
Scales and Balances.....	90
Steam Boilers and parts of Engines.....	100
Stoves, &c.....	529
Wire.....	88
Iron and Steel, all other mfrs.....	373
Lamps.....	152
Plated Ware.....	103
Tinware.....	115
Wooden Ware.....	378
BOLIVIA.	
Machinery.....	\$823
Saws and Tools.....	325
Scales and Balances.....	20
Iron and Steel, all other mfrs.....	3,389
Lamps.....	22
Tinware.....	15
Wooden Ware.....	56
BRAZIL.	
Plows and Cultivators.....	\$3,065
All other Agricultural Impts. and parts.....	8,284
Brass and Brass Goods.....	6,058
Clocks.....	13,422
Copper Goods.....	59
Gunpowder.....	12
Other explosives.....	4,748
Car Wheels.....	460
Castings.....	135
Cutlery.....	4,235
Firearms.....	19,444
Builders' Hdw.....	15,382
Machinery.....	33,419
Cut Nails and Spikes.....	2,900
Wire Nails, Horse Nails, Tacks, &c.....	2,173
Saws and Tools.....	\$39,247
Scales and Balances.....	3,936
Steam Stationary Engines.....	554
Steam Boilers and parts of Eng's.....	2,007
Stoves, &c.....	1,894
Wire.....	1,317
Iron and Steel, all other manufactures.....	27,918
Lamps.....	5,908
Lead and manufactures.....	1,087
Plated Ware.....	3,398
Tinware.....	2,264
Wooden Ware.....	1,046
Emery Cloth.....	121
Emery Paper.....	34
BRITISH AFRICA.	
Machinery.....	\$7,211
Cut Nails and Spikes.....	1,765
Saws and Tools.....	7,539
Scales and Balances.....	197
Stoves, &c.....	3,325
Wire.....	6,516
Iron and Steel, all other mfrs.....	1,088
Lamps.....	540
Plated Ware.....	752
Wooden Ware.....	1,302
BRITISH EAST INDIES.	
Scales and Balances.....	\$77
Iron and Steel, all other mfrs.....	223
Lamps.....	9,641
Lead and mfrs.....	18
Plated Ware.....	915
Wooden Ware.....	26
BRITISH GUIANA.	
Saws and Tools.....	\$1,149
Scales and Balances.....	89
Stoves, &c.....	364
Iron and Steel, all other manufactures.....	252
Lamps.....	545
Lead and manufactures.....	144
Plated Ware.....	200
Tinware.....	45
Wooden Ware.....	30

BRITISH HONDURAS		DANISH WEST INDIES.		GIBALTAR.	
Agricult. Impls. and parts.....	\$20	Steam Stationary Engines.....	\$332	Cut Nails and Spikes.....	\$193
Brass and Brass Goods.....	58	Stoves, &c.....	120	Firearms.....	\$8,690
Clocks.....	9	Wire.....	69	GERMANY.	
Firearms.....	86	Iron and Steel, all other manufactures.....	115	Mowers and Reapers.....	\$128,579
Builders' Hdw.....	220	Lamps.....	196	Plows and Cultivators.....	19
Machinery.....	262	Lead and manufactures.....	42	All other Agriculture Impls. and Parts.....	20,511
Cut Nails and Spikes.....	269	Woodenware.....	29	Brass and Brass Goods.....	2,213
Saws and Tools.....	689	Zinc, all other manufactures.....	23	Clocks.....	1,198
Scales and Balances.....	59			Copper Ore.....	2,150
BRITISH WEST INDIES.		DENMARK.		Copper Ingots, Bars and Old.....	73,996
Mowers and Reapers.....	\$121	Mowers and Reapers.....	\$13,722	Copper Goods.....	45
Plows and Cultivators.....	174	Plows and Cultivators.....	250	Explosives.....	1,843
All other Agriculture Impls. and parts.....	400	All other Agriculture Impls. and parts.....	4,693	Castings.....	3,774
Brass and Brass Goods.....	232	Brass and Brass Goods.....	487	Cutlery.....	824
Clocks.....	1,098	Clocks.....	1,020	Firearms.....	9,586
Copper Goods.....	86	Firearms.....	81	Builders' Hdw.....	24,470
Gunpowder.....	7,144			Machinery.....	85,928
Other Explosives.....	4,782			Wire Nails, Horse Nails, Tacks, &c.....	158
Castings.....	126			GUATEMALA.	
Cutlery.....	292			Plows and Cultivators.....	\$76
Firearms.....	659			All other Agriculture Impls. and Parts.....	155
Builders' Hdw.....	2,697			Brass and Brass Goods.....	1,925
Machinery.....	13,514			Clocks.....	315
Cut Nails and Spikes.....	2,610			Copper Ingots, Bars and Old.....	75
CHILL.				Bar Iron.....	55
Plows and Cultivators.....	\$3,111			Firearms.....	1,207
All other Agriculture Impls. and Parts.....	2,833			Builders' Hdw.....	880
Brass and Brass Goods.....	719			Machinery.....	6,475
Clocks.....	1,012			Cut Nails and Spikes.....	25
Gunpowder.....	101			Saws and Tools.....	3,462
Other Explosives.....	6,586				
Castings.....	75				
Cutlery.....	424				
Firearms.....	8,200				
Builders' Hdw.....	11,109				
Machinery.....	6,419				
Cut Nails and Spikes.....	6,954				
CHINA.					
Agricult. Impls. and parts.....	\$235				
Brass and Brass Goods.....	6,550				
Clocks.....	3,758				
Cutlery.....	80				
Firearms.....	10,565				
Builders' Hdw.....	665				
COLOMBIA.					
Plows and Cultivators.....	\$255				
All other Agriculture Impls. and parts.....	84				
Brass and Brass Goods.....	471				
Clocks.....	1,978				
Copper Goods.....	350				
Gunpowder.....	4,478				
Other Explosives.....	2,586				
Castings.....	186				
Cutlery.....	120				
Firearms.....	3,839				
Ingots, Bars and Rods of Steel.....	599				
Builders' Hdw.....	2,673				
Machinery.....	7,523				
Cut Nails and Spikes.....	658				
Wire Nails, Horse Nails, Tacks, &c.....	74				
Saws and Tools.....	10,842				
COSTA RICA.					
Agricult. Impls. and Parts.....	\$12				
Brass and Brass Goods.....	137				
Clocks.....	106				
Copper Goods.....	148				
Gunpowder.....	33				
Other Explosives.....	259				
Pig Iron.....	85				
Castings.....	45				
Cutlery.....	34				
Ingots, Bars and Rods of Steel.....	188				
Builders' Hdw.....	1,458				
Wire Nails, Horse Nails, Tacks, &c.....	70				
Machinery.....	3,601				
CUBA.					
Plows and Cultivators.....	\$15,574				
All other Agriculture Impls. and parts.....	11,377				
Brass and Brass Goods.....	6,783				
Clocks.....	4,570				
Copper Goods.....	4,618				
Gunpowder.....	483				
Other explosives.....	652				
Bar Iron.....	9,231				
Car Wheels.....	3,340				
Castings.....	5,019				
Cutlery.....	4,420				
Firearms.....	442				
Ingots, Bars and Rods of Steel.....	1,230				
Builders' Hdw.....	61,912				
Machinery.....	159,744				
Cut Nails and Spikes.....	15,963				
Wire Nails, Horse Nails, Tacks, &c.....	5,134				
Steel Rails.....	36,706				
Saws and Tools.....	28,843				
ECUADOR.					
Brass and Brass Goods.....	\$9				
Clocks.....	15				
Copper Goods.....	113				
Cutlery.....	607				
Firearms.....	164				
Builders' Hdw.....	1,278				
Machinery.....	738				
Cut Nails and Spikes.....	34				
Wire Nails, Horse Nails, Tacks, &c.....	34				
EGYPT.					
Mowers and Reapers.....	\$9,016				
ENGLAND.					
Mowers and Reapers.....	\$27,882				
All other Agriculture Impls. and parts.....	41,767				
Brass and Brass Goods.....	15,013				
Clocks.....	89,302				
Copper Ore.....	560,500				
Copper Ingots, Bars and Old.....	37,145				
Copper Goods.....	404				
Explosives.....	89				
Castings.....	3,305				
Cutlery.....	1,625				
Firearms.....	13,669				
Builders' Hdw.....	59,172				
Machinery.....	257,245				
Cut Nails and Spikes.....	75				
Wire Nails, Horse Nails, Tacks, &c.....	755				
Saws and Tools.....	31,500				
Scales and Balances.....	1,375				
FRANCE.					
Mowers and Reapers.....	\$102,577				
Plows and Cultivators.....	2,494				
All other Agriculture Impls. and Parts.....	15,820				
Brass and Brass Goods.....	3,705				
Clocks.....	158				
Copper Ingots, Bars and Old.....	316,472				
Copper Goods.....	114				
Castings.....	507				
Cutlery.....	4,543				
Firearms.....	2,880				
Builders' Hdw.....	1,587				
FRENCH AFRICA.					
Mowers and Reapers.....	\$6,080				
Plows and Cultivators.....	1,483				
FRENCH WEST INDIES.					
Plows and Cultivators.....	\$8				
All other Agriculture Impls. and Parts.....	3				
Brass and Brass Goods.....	17				
Cutlery.....	10				
GREECE.					
Builders' Hdw.....	\$172				
Machinery.....	1,296				
Saws and Tools.....	37				
HONG KONG.					
All other Agriculture Impls. and parts.....	\$57				
Clocks.....	3,567				
Copper Goods.....	30				
Explosives.....	323				
Firearms.....	2,503				
Builders' Hdw.....	467				
Machinery.....	281				
Saws and Tools.....	722				
IRELAND.					
Mowers and Reapers.....	\$780				
Clocks.....	645				
Builders' Hdw.....	816				
Machinery.....	198				
ITALY.					
Mowers and Reapers.....	\$7,513				
Plows and Cultivators.....	1,275				
All other Agriculture Impls. and Parts.....	1,580				
Clocks.....	7				
Copper Ingots, Bars and Old.....	300				
Explosives.....	80				
Firearms.....	311				
JAPAN.					
Agricult. Impls. and Parts.....	\$183				
Brass and Brass Goods.....	9,740				
Gunpowder.....	230				
Firearms.....	987				
Builders' Hdw.....	131				
Scales and Balances.....	832				
Clocks.....	\$35				
Builders' Hdw.....	31				
Cut Nails and Spikes.....	21				
Saws and Tools.....	42				
LIBERIA.					
Stoves, &c.....	\$31				
Iron and Steel, all other manufactures.....	4				
Tinware.....	6				

MEXICO.			PORTUGAL.			VENEZUELA.			
Mowers and Reap-ers.....	\$35	Wire Nails, Horse Nails, Tacks, &c.....	\$2,784	Mowers and Reap-ers.....	\$5	Wire Nails, Horse Nails, Tacks, &c.....	\$1,802		
Plows and Cultivators.....	456	Scales and Balances.....	2,352	Plows and Cultivators.....	37	Iron Plates and Sheets.....	109		
All other Agricult. Impls. and parts.....	674	Steam Stationary Engines.....	6,539	All other Agricult. Impls. and parts.....	143	Saws and Tools.....	10,801		
Brass and Brass Goods.....	7,168	Steam Boilers and parts of Engin's.....	9,802	Brass and Brass Goods.....	318	Scales and Balances.....	2,862		
Clocks.....	4,270	Stoves, &c.....	286	Clocks.....	736	Steam Stationary Engines.....	1,778		
Copper Ore.....	5,750	Wire.....	9,075	Copper Goods.....	1,858	Steam Boilers and parts of Engines.....	217		
Copper Goods.....	5,524	Iron and Steel, all other manuf-actures.....	49,136	Gunpowder.....	3,600	Stoves, &c.....	981		
Gunpowder.....	1,083	Lamps.....	4,428	Other Explosives.....	117	Wire.....	28,779		
Other explosives.....	5,160	Lead and manu-factures.....	1,424	Pig Iron.....	29	Iron and Steel, all other Mfrs.....	10,009		
Bar Iron.....	25	Plated Ware.....	585	Car Wheels.....	272	Lamps.....	1,421		
Castings.....	711	Tinware.....	1,496	Cutlery.....	3,149	Lead and Mfrs.....	571		
Cutlery.....	1,262	Wooden Ware.....	61	Firearms.....	5,063	Plated Ware.....	581		
Firearms.....	5,718	Zinc, all other manufactures.....	447	Builders' Hdw.....	2,384	Tinware.....	866		
Builders' Hdw.....	18,729	Emery Cloth.....	110	Cut Nails and Spikes.....	158	Wooden Ware.....	86		
Saws and Tools.....	28,481	Emery Wheels.....	75	Machinery.....	18,574	Emery Cloth.....	7		
Cut Nails and Spikes.....	1,979								
MIGUELON, LANGLEY, ETC.			RUSSIA ON THE BALTIC.			ALL OTHER COUNTRIES IN AFRICA.			
Wire Nails, Horse Nails, Tacks, &c.....	\$3	Iron and Steel and other manu-factures.....	\$4	Mowers and Reap-ers.....	\$30,864	Brass and Brass Goods.....	\$44	Machinery.....	\$571
Saws and Tools.....	\$5			All other Agricult. Impls. and parts.....	883			Saws and Tools.....	404
Zinc Ore.....	2					ALL OTHER COUNTRIES IN ASIA.			
NETHERLANDS.			RUSSIA ON THE BLACK SEA.			Saws and Tools.....	\$160	Stoves, &c.....	\$36
Mowers and Reap-ers.....	\$15,815	Machinery.....	\$13,686	Mowers and Reap-ers.....	\$93,596	Scales and Balances.....	897	Lamps.....	23
Plows and Cultivators.....	102	Saws and Tools.....	655	All other Agricult. Impls. and parts.....	1,597			Plated Ware.....	85
All other Agricult. Impls. and parts.....	3,605	Scales and Balances.....	349	SPAIN.					
Clocks.....	248	Stoves, &c.....	156	Saws and Tools.....	\$6				
Copper Ingots.....	266,563	Iron and Steel, all other manuf-actures.....	7,264	Iron and Steel, all other manuf-actures.....	350				
Copper Goods.....	3,823	Lamps.....	105	Plated Ware.....	476				
Car Wheels.....	303	Tinware.....	3,032	Wooden Ware.....	89				
Castings.....	69	Wooden Ware.....	120	SCOTLAND.					
Cutlery.....	454	Zinc, all other manufactures.....	4,900	Mowers and Reap-ers.....	\$5,512	Machinery.....	\$22,731		
Firearms.....	853	Emery Cloth.....	125	Plows and Cultivators.....	1,408	Saws and Tools.....	2,236		
Builders' Hdw.....	1,912	Nickel Oxide.....	13,718	All other Agricult. Impls. and parts.....	3,634	Steam Boilers and parts of Engines.....	450		
NEWFOUNDLAND, ETC.				Clocks.....	5,697	Stoves, &c.....	35		
Plows and Cultivators.....	\$78	Steam Boilers and parts of Eng-ines.....	\$160	Castings.....	640	Iron and Steel, all other manuf-actures.....	376		
All other Agricult. Impls. and parts.....	69	Stoves, &c.....	334	Cutlery.....	143	Lamps.....	1,573		
Brass and Brass Goods.....	2,232	Iron and Steel, all other manuf-actures.....	2,612	Firearms.....	75	Tinware.....	44		
Clocks.....	908	Lamps.....	303	Builders' Hdw.....	6,223	Wooden Ware.....	1,998		
Builders' Hdw.....	1,655	Lead and manu-factures.....	58	SALVADOR.					
Machinery.....	8,325	Plated Ware.....	272	Agricult. Impls. and Parts.....	194	Saws and Tools.....	\$1,407		
Saws and Tools.....	968	Tinware.....	370	Brass and Brass Goods.....	7,872	Scales and Balances.....	60		
Scales and Balances.....	173	Wooden Ware.....	190	Clocks.....	54	Steam Locomotive Engines.....	8,385		
NICARAGUA.				Cutlery.....	117	Wire.....	4,232		
Agricult. Impls. and Parts.....	\$24	Wire Nails, Horse Nails, Tacks, &c.....	\$42	Firearms.....	38,504	Iron and Steel, all other manuf-actures.....	2,600		
Brass and Brass Goods.....	124	Stoves, &c.....	67	Builders' Hdw.....	825	Lamps.....	285		
Clocks.....	32	Wire.....	493	Machinery.....	4,169	Lead and manu-factures.....	114		
Copper Goods.....	59	Iron and Steel, all other manuf-actures.....	624	Cut Nails and Spikes.....	234	Emery Cloth.....	35		
Gunpowder.....	31	Lamps.....	706	Wire Nails, Horse Nails, Tacks, &c.....	66	SANTO DOMINGO.			
Other explosives.....	111	Lead and manu-factures.....	537	Plows and Cultivators.....	185	Saws and Tools.....	\$1,417		
Firearms.....	224	Plated Ware.....	138	All other Agricult. Impls. and parts.....	56	Scales and Balances.....	133		
Builders' Hdw.....	567	Tinware.....	49	Clocks.....	9	Steam Boilers and parts of Engines.....	58		
Machinery.....	2,062	Wooden Ware.....	22	Copper Goods.....	56	Stoves, &c.....	16		
Saws and Tools.....	311	NOVA SCOTIA.			Explosives.....	5,179	Wire.....	1,456	
Cut Nails and Spikes.....	76	Stoves, &c.....	\$25	Band, Hoop and Scrap Iron.....	20	Iron and Steel, all other manuf-actures.....	4,974		
NOVA SCOTIA.			Iron and Steel, all other M'fctures.....	Bar Iron.....	148	Lamps.....	788		
Brass and Brass Goods.....	\$116	Iron and Steel, all other M'fctures.....	160	Cutlery.....	644	Lead and manu-factures.....	6		
Clocks.....	263	Lamps.....	48	Firearms.....	13,375	Plated Ware.....	92		
Copper Ingots.....	21	Lead and Manu-factures.....	70	Ingots, Bars and Rods of Steel.....	59	Tinware.....	115		
Copper Goods.....	1,988	Plated Ware.....	41	Builders' Hdw.....	653	Wooden Ware.....	13		
Gunpowder.....	31	Tinware.....	138	Machinery.....	39,234	Zinc Pigs, Bars, Plates, and Sheets.....	75		
Castings.....	20	Wooden Ware.....	53	Cut Nails and Spikes.....	652	Zinc, all other manufactures.....	30		
Firearms.....	179	Zinc, all other manufactures.....	63	Wire Nails, Horse Nails, Tacks, &c.....	214	Emery Paper.....	14		
Builders' Hdw.....	755	Molding Sand.....	60	Steel Rails.....	377	SWEDEN AND NORWAY.			
Machinery.....	747	PERU.			SWITZERLAND.				
Saws and Tools.....	297	Machinery.....	\$5,714	Brass and Brass Goods.....	\$1,200	Machinery.....	\$158		
PHILIPPINE ISLANDS.			Saws and Tools.....	1,815	Mowers and Reap-ers.....	\$4,500	Saws and Tools.....	111	
Plows and Cultivators.....	\$694	Scales and Balances.....	817	Plows and Cultivators.....	3,232	All other Agricult. Impls. and parts.....	2,018		
Brass and Brass Goods.....	252	Iron and Steel, all other M'fctures.....	1,229	All other Agricult. Impls. and parts.....	267	Stoves, &c.....	15		
Clocks.....	135	Lamps.....	785	Clocks.....	4,733	Iron and Steel, all other manuf-actures.....	76		
Copper Goods.....	151	Lead and Manu-factures.....	944	Copper Goods.....	1,165	Lamps.....	1,764		
Explosives.....	693	Plated Ware.....	518	Explosives.....	5,179	Plated Ware.....	75		
Castings.....	616	Wooden Ware.....	7	Builders' Hdw.....	117	SWITZERLAND.			
Cutlery.....	616	Zinc Ore.....	526	TURKEY IN ASIA.					
Firearms.....	538	PORTO RICO.			Brass and Brass Goods.....	\$1,200	Machinery.....	\$158	
Builders' Hdw.....	916	Steam Locomotive Engines.....	\$4,408	Mowers and Reap-ers.....	\$12,618	Saws and Tools.....	325		
Wire Nails, Horse Nails, Tacks, &c.....	45	Steam Stationary Engines.....	1,075	All other Agricult. Impls. and parts.....	2,018	Lamps.....	25		
PHILIPPINE ISLANDS.			Steam Boilers and parts of Engines.....	TURKEY IN EUROPE.					
Machinery.....	\$123	Stoves, &c.....	1,784	Mowers and Reap-ers.....	\$7030	Firearms.....	\$38		
Saws and Tools.....	46	Wire.....	7,803	All other Agricult. Impls. and parts.....	267	Machinery.....	1190		
Scales and Balances.....	147	Iron and Steel, all other manuf-actures.....	2,394	Clocks.....	4,733	Explosives.....	88		
PORTO RICO.			Lamps.....	Explosives.....	5,179	URUGUAY.			
Plows and Cultivators.....	\$865	Lead and man'f'rs.....	234	Builders' Hdw.....	2506	Cut Nails and Spikes.....	13		
All other Agricult. Impls. and parts.....	252	Plated Ware.....	521	Machinery.....	6629	Wire Nails, Horse Nails, Tacks, &c.....	65		
Brass and Brass Goods.....	372	Tinware.....	153	Explosives.....	2973	Saws and Tools.....	2432		
Clocks.....	416	Wooden Ware.....	404	Firearms.....	2761	Scales and Balances.....	40		
Copper goods.....	292	Zinc, all other manufactures.....	10	Builders' Hdw.....	2506	Stoves, &c.....	264		
Explosives.....	115	Emery Cloth.....	24	Explosives.....	2506	Iron and Steel, all other manuf-actures.....	510		
Castings.....	14			Machinery.....	6629	Lamps.....	243		
Cutlery.....	35			Tinware.....	188	Plated Ware.....	1085		
Builders' Hdw.....	927			URUGUAY.					
Machinery.....	1,351			Cut Nails and Spikes.....	13				
Cut Nails & Spikes.....	904			Wire Nails, Horse Nails, Tacks, &c.....	65				
Wire Nails, Horse Nails, Tacks, &c.....	241			Saws and Tools.....	2432				
Saws and Tools.....	1,501			Scales and Balances.....	40				
Scales and Balances.....	2,600			Stoves, &c.....	264				

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

There are, as yet, no signs of revival of activity in building operations or in other enterprises that have been held in check by the stringency in the money market, nor have jobbers deviated from the conservative lines upon which their operations have been conducted since the opening of the spring season. The idea that the safest policy is the best one to pursue seems to be deep-rooted and governs operations in a great measure all along the line; hence a rather quiet condition of trade in nearly all varieties of Paints and Colors and absence of really new features. It may be proper to note, however, that prevailing conditions have been pretty well discounted and affairs so adjusted that the markets retain remarkably good form despite the more or less adverse circumstances against which all interests from manufacturer and importer (down to the small retailer have had to contend during the past 60 days.

White Lead.—On this pigment there is nothing to report, except that business has been fair in volume, and that prices stand almost precisely as they have ruled for several weeks. The well-worn rumors of "cut" prices and contemplated outside competition with the combined corrodors and allies still have circulation, but those rumors do not appear to have more solid foundation than others that have frequently been brought out by speculators whose interest begins and ends on the Stock Exchange. It is the plain, simple fact that corrodors employing the old Dutch process are more than holding their own against outside competition; that the manufacturers of "quick process" and mixed Leads continue in the business, and that the respective products are selling on their merits. Such as it is, the irregularity in prices is confined almost wholly to jobbers, and it does not transpire that the concessions in that branch of the trade are greater now than they have been at any previous time this year.

Red Lead and Litharge.—Orders have been somewhat more numerous the past few days. As a rule only moderate quantities of stock were called for, but the volume of business has doubtless exceeded that of the preceding week, more particularly in the instance of the cheaper grades of Litharge. In prices there have been no changes and the market preserves a very steady tone.

Orange Mineral.—Sales of foreign product have been rather more numerous, but the supply is ample and orders are filled at old prices without difficulty. Domestic product is also steady as to price, but meets with rather slow sale at the moment.

Oxide Zinc.—Between stiff prices for Ores and good demand for Oxide, the

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market for the latter remains very firm. There is also a good steady demand that helps the market in no uncertain way, and except, perhaps, in the case of low quality product prices are well maintained. The movement in foreign Zinc is almost wholly of hand-to-mouth type, yet fair, all told, and the business passing is at the former line of prices.

Colors, etc.—There have been no new developments in the market for either Dry or Oil Colors. Prices are a little irregular in some lines, yet the changes are few and chiefly such as frequently occur between specially desirable contracts and ordinary orders. Taken as a whole the market for high grade goods keeps fairly steady. Ready-mixed Paints and Metallic Paints are moving fairly at old prices.

Miscellaneous.—The Block Chalk at hand this week has nearly all been disposed of through deliveries on former contracts. On new business importers quote firm at about \$2.50. Whiting and Paris White are in very fair demand and realize former prices. Barytes and Clays generally are rather quiet and selling at about former prices.

Oils and Turpentine.

The main features are practically a counterpart of those that characterized the market last week, with active movement in Cotton-Seed product for shipment direct from the South to large home consumers and export markets the most conspicuous of anything as far as actual movement is concerned. However, the fact is prominent that values have been well maintained all along the line and that general distribution shows enough increase to encourage the belief that a livelier general trade will be experienced before the end of the month. Changes in prices have been few during the week, and almost invariably in sellers' favor.

Linseed Oil.—The distribution of this product has hardly been up to full average volume for the season, but city crushers note a decided improvement during the past few days, and sellers of Western brands also note some increase in custom. All told, the movement appears sufficient to keep matters in very fair shape, and with little if any friction here or in the West, prices remain very steady. Out-of-town brands may be secured to a limited extent at 49¢, possibly at 1¢ less, but on city brands 50¢ is strictly inside price.

Cotton-Seed Oils.—Nearly or quite 15,000 barrels Summer Yellow have been purchased in the South, chiefly for direct shipment to large Western consumers. Some lines were taken for export also, and in the local market exporters purchased about 2500 barrels, paying 50¢, f.o.b. steamer. The latter price fairly reflected market value at the close. Crude Oil has hardened in price, several lots having been placed at 45¢ @ 46¢, and is in better demand. The Union Oil Company, Providence, R. I., have advanced their prices, as follows:

	1 to 10 barrels.	10 barrels and over.
Pure Salad	60¢	58¢
Olive Flavored.....	60¢	58¢
Winter White.....	60¢	58¢
Winter Yellow....	59¢	57¢

Lard Oil.—The market has been very firm at the higher prices established last week. The movement in raw material is responsible for this in some degree, but good steady demand that has absorbed the output of city pressers and taken up about all the outside offering is the strongest feature. Business has been chiefly at 83¢ @ 84¢ for present make prime, and corresponding figures for the lower grades.

Fish Oils.—Crude Sperm is in moderate supply and held firmly at full former prices. Crude Whale has been sold at 42½¢, which price reflects extreme value at the moment. In the manufactured products there is a fair business at the old line of prices. Cod Oil is held firmly, since stocks here are moderate, but busi-

ness is almost wholly of jobbing character and moderate, all told.

Miscellaneous.—Common Olive Oil has been coming forward quite freely and prices have weakened slightly, or to 60¢ @ 62¢, as to size of lot involved. Coconut Oil has found limited sale and prices have turned slightly in buyers' favor. Red Oils are somewhat irregular in price and selling slowly. Tallow Oil in light supply, with former prices the rule on moderate sales making.

ment are shown in Fig. 2 when removed from the anvil, and leaving it free for any work required of a blacksmith's anvil. It is stated that the face of the anvil is in one piece of high grade cast steel of a hard, uniform temper, 16½ inches long, with a reduction in width at one end for narrow work to 3 inches; the rest is 4 inches wide. The horn with its side clip is of unhardened steel and about 11 inches long. A part of the face is beveled down



Fig. 1.—Combined Anvil and Vise.

Spirits Turpentine.—The demand has not improved in the slightest degree. Receipts have been quite well worked off, but concessions on price were necessary to keep stock moving, and on late dealings there was a decline to 30½¢ for ordinary and 31¢ for machine barrels.

Combined Anvil and Vise.

The Eagle Anvil Works, Trenton, N. J., have recently put on the market the above tool, as illustrated in the accompanying cuts.

Fig. 1 shows the vise attachment in position, the hardened steel jaw being pivoted by a blind joint in a special socket at the base of the anvil and closed by a bolt passing through the body of the anvil, which has on the other side a slotted head, its extremity being held to the jaw by the thumb screw. Into this slotted head the upper end of the lever engages; it pivots with a knife edge on that side of the anvil, and extending downward terminates in a treadle at a convenient height for the foot. A plain spring on the inner side of the jaw throws it open when the foot is removed from the treadle, leaving it ready to insert the shoe for turning the calks of toe or heel. The whole arrangement is contained in the anvil itself, none of the connections being with the block on which the anvil is secured by the lugs.

The jaw, treadle, bolt and thumb screw, four pieces only, of this vise attach-

for drawing over the edge, as shown in both cuts. The point is made that in use the vise or the anvil is not hampered by the presence of the other, and that by the removal of a single thumb screw the whole vise attachment falls off and leaves the anvil intact and free from any incumbrance

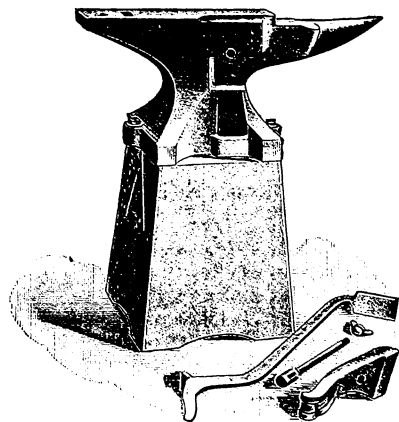


Fig. 2.—Vise Disconnected from Anvil.

or interference with its general use. It is especially for horseshoers' anvils of about 170 pounds weight, to hold the shoe and turn the calks without the expense and loss of time by the use of a separate vise, as usually done.

Edgar's Whiffletree Centers.

The accompanying illustrations represent centers for whiffletrees, as offered by John Edgar, Rochester, Minn. As will be seen from Fig. 1, the center bolt has no nut on either end, but is held in place by a collar on the pin under the bracket. The brackets are constructed to keep both the single

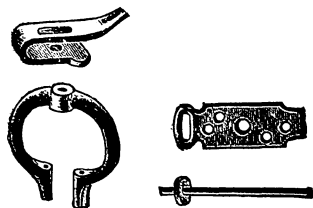


Fig. 1.—Edgar's Whiffletree Centers.

and double trees true on the centers. It is pointed out that the irons provide a means of taking up all slack from wear, that the teetering motion which breaks the center pin is prevented, and that the pulling or

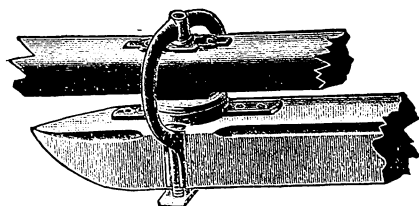


Fig. 2.—As Applied to Singletree.

rolling forward of both double and single trees is obviated. The manufacturer claims that the single and double trees stand firm in their places, thus saving the cutting of the plates; that the irons can be used with any center plates now in use, involving no change except the putting of them on, and that the breaking of the center pin, working off of the nut on the

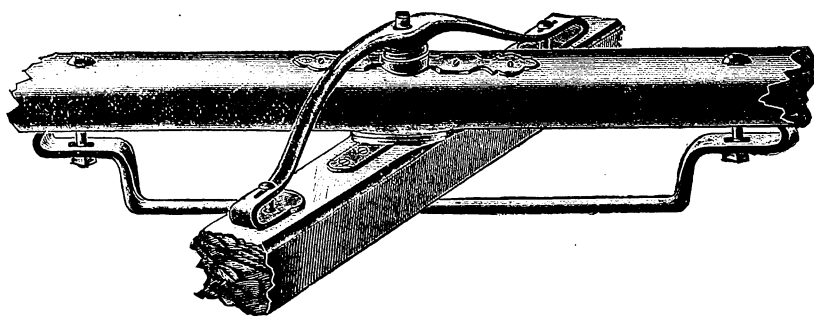


Fig. 3.—Arrangement of Doubletree.

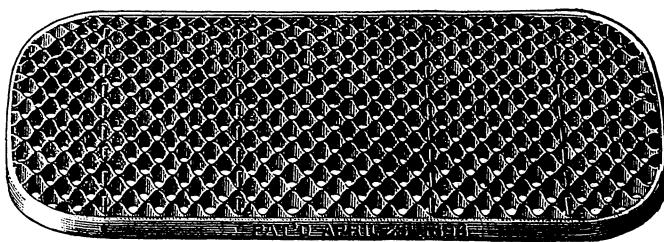
center pin, the rolling over of the trees and other annoyances of this character, are not encountered.

Acme Corrugated Steel Mat.

Cobin Mfg. Company, 107 Chambers street, New York, are putting the mat on the market as shown in the accompanying cut. The mat is made of corrugated steel strips held rigidly in a frame by means of rods, and also by projecting tips on each alternate strip, which engage in corresponding holes in the strips next to them. The manufacturers claim that the mats will keep their shape, as the tips make it impossible for the corrugated strips to move from the position in which they are originally placed. It is also claimed that the mats are clean, not accumulating deposits; that they are almost indestructible; that they are reversible; that they are safe, there being no danger of slipping; they

will not flatten out, and that there are no points to catch or mutilate skirts or trousers. The mats are galvanized, and are recommended by the manufacturers for all places where mats are required.

is a stop which prevents the leaves from opening beyond a line straight with the handle, which feature is referred to as further facilitating its use for inside work. The larger pitches can be used as gauges



Acme Corrugated Steel Mat.

They are made regularly in eight sizes, from 16 x 24 to 36 x 72 inches. Extra sizes and unusual shapes are made to order.

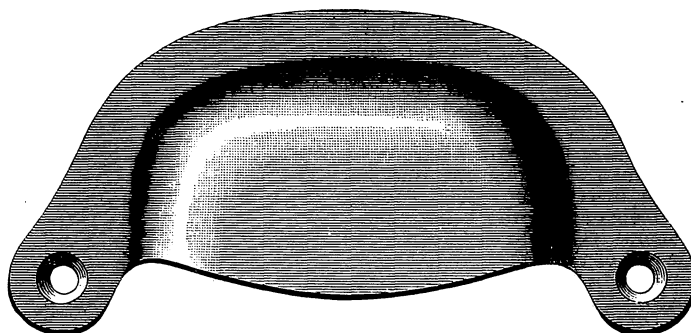
Drawer Pulls.

Sargent & Co., New York, are putting on the market a line of drawer pulls, as represented in the accompanying full-

size cut. The gauge is designed to determine all pitches in common use from 4 to 40 per inch, including those for pipe and brass work, 11½ and 27 per inch.

Indurated Fiber Water Bucket.

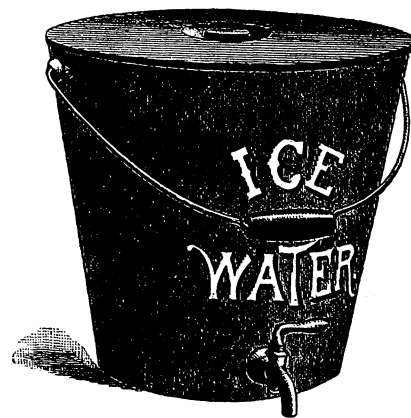
Cordley & Hayes, 172 Duane street, New York, are offering this article, as illustrated herewith. The inside diameter



Sheet-Metal Drawer Pull.

sized cut. They are formed out of sheet metal, making a lighter and more desirable

of the bucket is 12 inches, and it is 12 inches deep inside, having a capacity of 5 gallons. The faucet is nickel plated, the best, it is stated, the market can give,



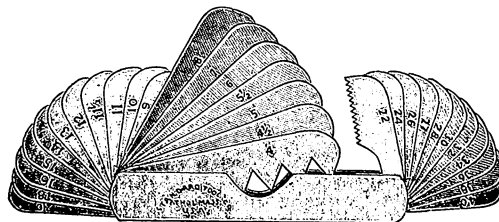
Indurated Fiber Water Bucket.

pull than those that are cast. The goods are furnished in Boston finish, Yeddo bronze and of highly polished bronze metal.

Screw Pitch Gauge.

The Standard Tool Company, Athol, Mass., are offering this tool, as herewith

and the bucket is provided with a cover. The bucket is referred to as a substitute for a water cooler, cheaper, though fully as good in every particular and very sen-



Screw Pitch Gauge.

shown. The leaves are sufficiently narrow to allow them to readily enter a nut, as shown in the cut, also with elevated knob.

Combined Scissors and Tracing Wheel.

Pauls Brothers, 88 Chambers street, New York, are offering the Echo brand of scissors, as illustrated herewith. When

which the movable catch is locked. The catch has a spring which holds it in an upright position when released, thus clearing the sash, Fig. 2; and a large head plunger in front, by pushing on which, Fig. 1, the slide is shoved back and the

and together, and that it renders the window burglar proof when open for ventila-

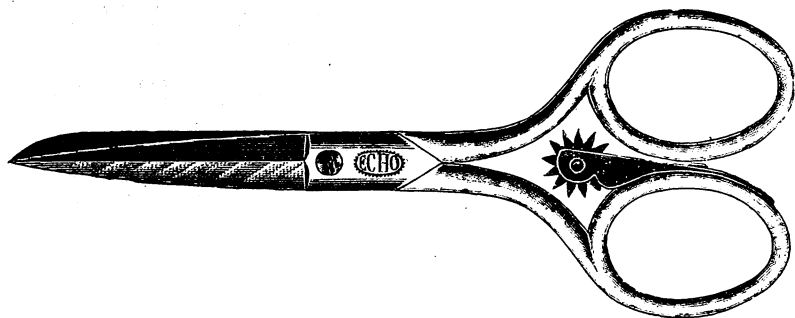


Fig. 1.—Combined Scissors and Tracing Wheel.

the tracing wheel is in the position shown in Fig. 1, the use of the scissors for cutting in the ordinary manner is not interfered with, as the wheel is protected by the bows. The piece holding the wheel

catch released. An electric button may be placed in the upper sash plate under the back of the catch, so that should a burglar break the glass and unlock the window an alarm would be sounded auto-

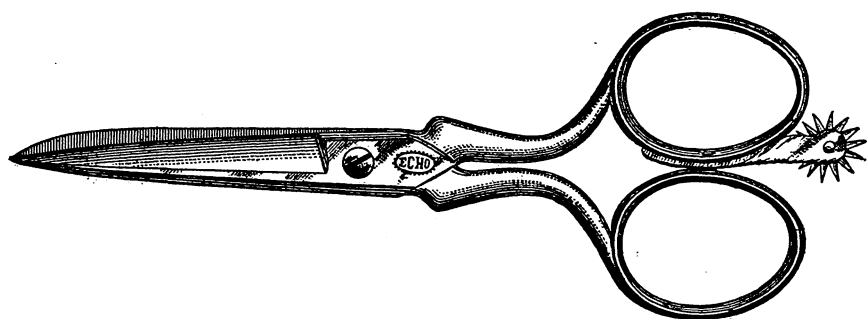


Fig. 2.—Position of Tracing Wheel when in Use.

is attached to one bow by a screw, which allows the wheel to be reversed to the outer end of the bow, as in Fig. 2, when it is desired to bring it into use. This brand of scissors is warranted by the manufacturers to be of solid steel, hand forged and free from flaws.

Electric and Ventilating Window Locks.

The accompanying cuts represent two styles of window lock manufactured by the Ventilating Window Lock Company, New Haven, Conn., for whom Edward G. Shepard, 142 Chambers street, New York, is agent. The locking and unlocking principle of the locks, shown in Figs. 1 and 3, are the same. The part of the lock

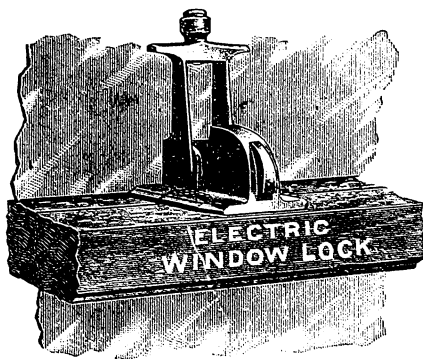


Fig. 2.—Electric Lock Open.

opened for ventilation, as in Fig. 4. The window is closed after ventilating, as shown in Fig. 5, by pushing the slide back with the thumb and raising the lower sash by means of the drop piece. In unlocking the window the drop, Fig. 3, is raised in a horizontal position which pushes back the slide and releases the catch. When the sash is in the position shown in Fig. 5 it allows the window to be opened 3 or 4 inches at the top or bottom, or the distance may be divided between the top and bottom. The manufacturers claim that the lock draws the sash up

golden bronze metal, and are made for all sizes of windows, including those of heavy

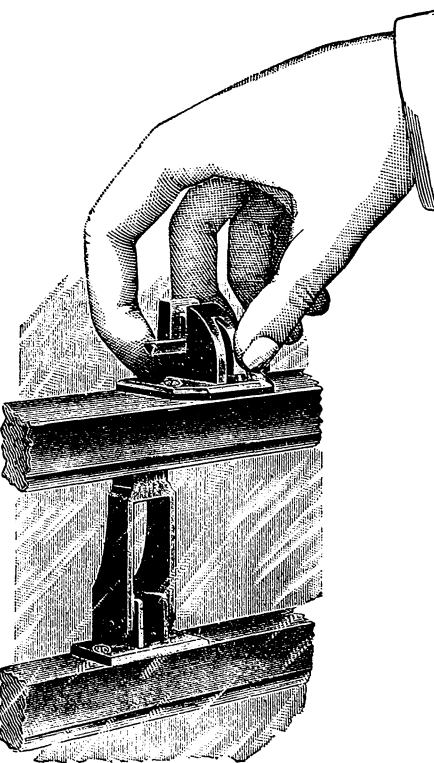


Fig. 5.—Closing Window After Ventilating.

plate glass used in public and private buildings, banking houses, offices, &c.

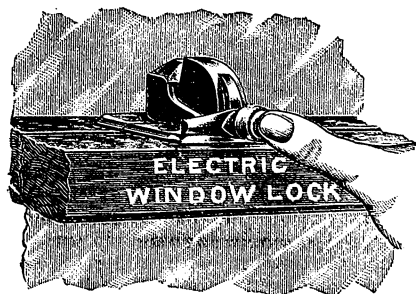


Fig. 1.—Electric Window Lock.

attached to the lower sash, Fig. 2, has a slide actuated by a spring, and a notch is cut out of the lower side in front, under

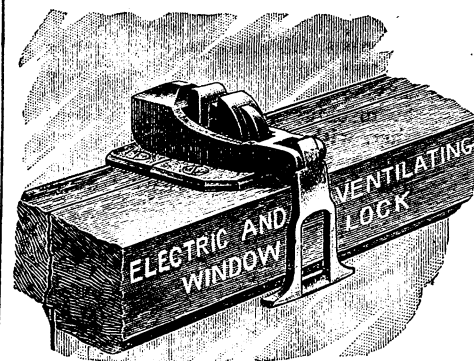


Fig. 3.—Electric and Ventilating Lock.

tion. The locks are well made and finished regularly in nickel plate or solid

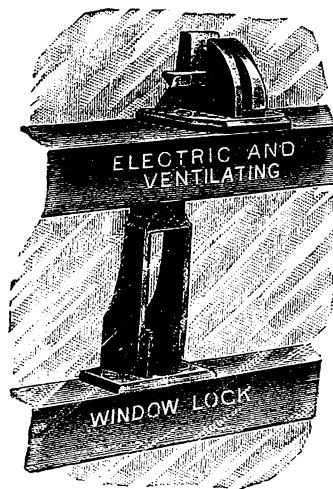


Fig. 4.—When Ventilating.

National Time Register.

The National Time Register Company, Columbus, Ohio, are putting on the market the register shown in the accompanying cuts. As will be seen in Fig. 1, the machine has two dials, one above the other, with a push button between. The uppermost is a paper record dial and the lower one a metal designating dial. The record dial which is behind a glass door

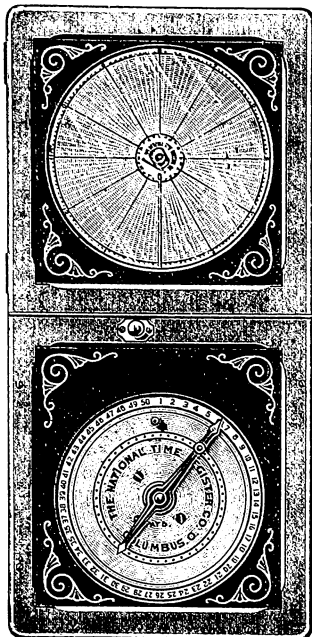


Fig. 1.—National Time Register.

securely locked revolves on the hour post of a clock movement, thus making one complete revolution in every 12 hours. It is divided by radial lines (from center to edge) denoting time, and concentric lines (circles around center) $\frac{3}{8}$ inch apart, the

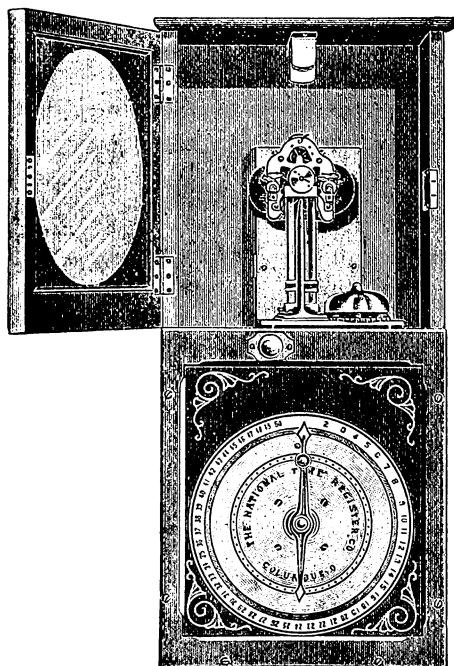


Fig. 2.—Door Open and Record Dial Removed.

latter being numbered from one up, to designate the employees, each of whom is given a number, the numbers commencing with one. Thus each employee's record is shown in one of these circular concentric spaces, by itself, and, it is stated, cannot

possibly be confused with any other. Extending from the lower edge of the space in which this record dial revolves to near its center are guide arms, between which the dial moves. These guide arms, it is explained, support a moving oblong block, equipped with a puncturing point, so arranged that when the push button is pressed a small hole is made in the paper

the record. Employee No. 1 is recorded in at 7.05, No. 2 at 7, No. 3 at 7.08, No. 4 at 6.55, No. 5 at 6.51, and so on.

If the employees have uniform hours a glance at the dial will tell if they are practically on time. From a closer examination the exact time of any individual or individuals is seen, no matter what hours they keep.

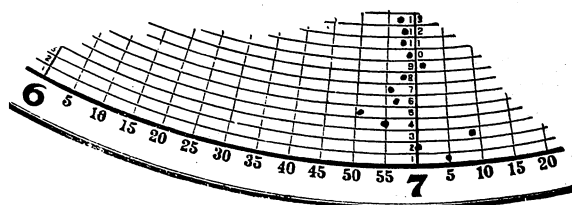


Fig. 3.—A Portion of the Dial.

dial as it moves between the guide arms. The metal designating dial is exposed to the operative, and has numbers corresponding to the concentric spaces on the record dial, ranged consecutively around the edge; and a metal pointer or hand, swung from the center of the dial, can be moved by the operative so as to point to any figure on the plate. The movable block containing the puncturing point is connected by simple mechanism with the designating hand on the metal dial in such manner as to work in unison with it. Thus when the hand is turned to number 21 the block moves up along the paper record dial to space number 21, when, by pressing the button, a small hole is made in the paper dial at that point and signifies that employee number 21 has registered. The point is made that the record dial is always moving with the hour post of the clock, and being properly set when put on, the radial lines show the exact time at which the puncture is made. A new dial is placed on each day and the old one, containing a complete record of the time of the employees for the day previous, is filed away under lock and key for future use if necessary. This is accomplished by opening the register door, as shown in Fig. 2.

The manufacturers claim that the register is simple, durable, accurate, easily and rapidly operated; that it keeps the time of employees paid by the hour by mechanical means, thereby rendering mistakes impossible and preventing favoritism; also that the time of men doing piece work is kept in the same manner, and that these results are obtained with the least possible machinery and at a minimum cost.

Bieder Adjustable Grass Catcher No. 7.

The accompanying cut represents a grass catcher as manufactured by the Cleveland Novelty Company, Cleveland, Ohio. The features embodied in this catcher are referred to as improvements in their Eureka catcher. The manufacturers state that



Bieder Adjustable Grass Catcher No. 7.

When the push button is pressed a bell is automatically tapped once, so, it is remarked, any attempt to register twice can be easily detected; that it is absolutely impossible to make more than one record at a time, and that the mechanism is so adjusted that the record is made at the instant the bell taps, thus controverting the excuse of an attempted register. Thus the employee makes his own record, but cannot favor himself one minute.

In Fig. 3 is shown a small portion of a record dial, illustrating the appearance of

the catcher is adjustable and fits all sizes and makes of mowers, and that the mode of attaching to the handle-braces makes them adjustable in height, thus adapting them to mowers with different sized wheels and with various shaped handle-braces. The forward ends of the frame are enclosed in a metal tube to prevent the canvas from wearing. The catcher is made deep to prevent the grass from flying over the sides or rear. The company continue to make the Eureka catcher, as referred to above.

Shaft Loop Attachments.

[[The accompanying cuts represent attachments for shafts, made by the Excelsior Shaft Loop Company, Moline, Ill. Figs. 1, 2, 3 and 4 show the

.32 Ideal Cartridge.

Ideal Mfg. Company, New Haven, Conn., are putting on the market the cartridge shown herewith. It is 1¼ inches long, is straight inside and outside, with

Stevens Arms Company are now making their new Ideal rifle for this cartridge.

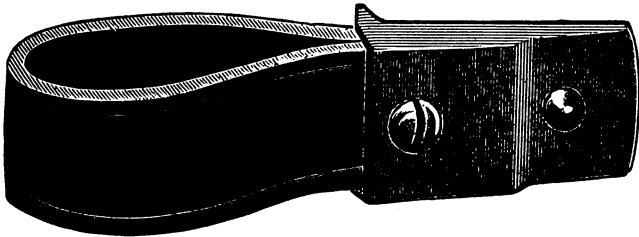


Fig. 1.—Hold-Back Loop No. 1.

loops full size, while the manner in which they are applied to the shaft is shown in Fig. 5. The point is made that they give additional safety to hold backs and singletree loops on shafts of vehicles.

a solid head and strong pocket, and is, it is stated, equal to the everlasting shells. It is designed for round bullets, or for the lighter grooved bullets cast in a Perfection mold, which may be seated down

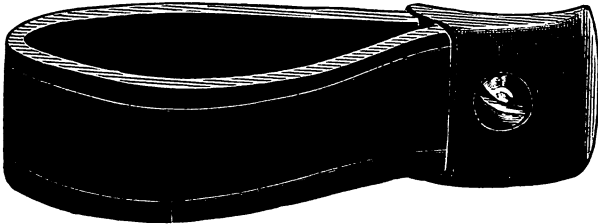


Fig. 2.—Singletree Loop No. 13.

The prongs on the hold-back loop, Fig. 1, are forced into the shaft, and the strap is held by a strong screw and nail passed through the attachment straps into the shafts, making them, it is claimed, absolutely safe and as easily put on as in the

upon the powder within the shell. This is referred to as a desirable feature not obtainable with common bottle-necked shells. The standard .32 Ideal cartridge, as made by the Union Metallic Cartridge Company,

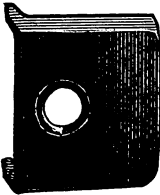


Fig. 3.—Lower Tug Loop No. 5.

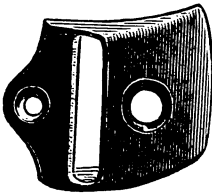
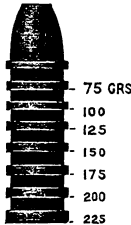


Fig. 4.—Upper Tug Loop No. 9.

old manner, with tacks, which are liable to give way under strain. The loops in Figs. 2 and 4 are referred to as giving a fine finish to the shafts and cross bar, and as reducing the cost of the straps nearly 40 per cent. The attachments are finished in japan, rubber finish, nickel or

will be the shell with 25 grains of powder and 125-grain bullet, seated to cover all grooves and no crimp. The diameter of the bullet is .323, making, it is remarked, a desirable central-fire inside lubricated cartridge. The point is made that the thousands of .32-caliber short, long and extra-

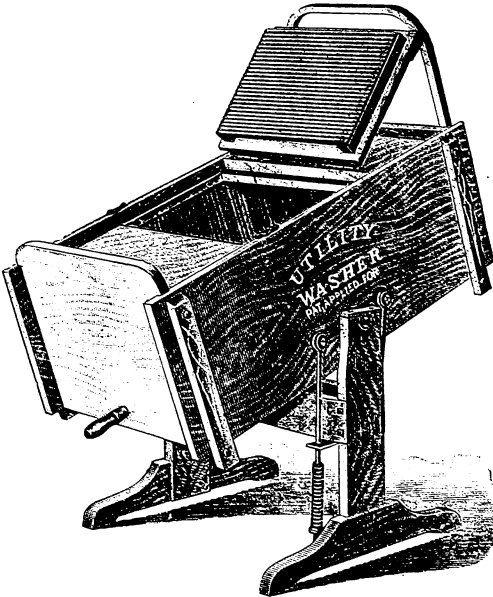


.32 Ideal Cartridge.

The .32 Ideal cartridges, primer, shells and bullets are listed separately.

The Utility Oscillating Washer.

The accompanying cut represents a washer put upon the market by Olds Wagon Works, Fort Wayne, Ind. In this machine the washing is accomplished through the medium of compensating springs, as, it is stated, the load in the machine itself furnishes nearly all of the power necessary to operate it. A wash



The Utility Oscillating Washer.

board is combined with the machine, attached to the under side of the lid, which is designed to be used for rubbing extra-soiled portions of the clothing, which, it is remarked, effects a saving of one handling of the clothes, thus combining in one machine a washing machine, washtub and washboard.

JUDGE GEORGE M. DALLAS of the Circuit Court of the United States for the Eastern District of Pennsylvania has rendered a decision in the suit brought by Wm. Wilkinson & Sons, Limited, against the J. Barton Smith Company for infringement of trade-mark, by which it is decreed that the plaintiffs are entitled to the exclusive use upon Sheep Shears of the trade-marks "William Wilkinson" and "Wilkinson." An injunction has also been issued restraining the J. Barton Smith Company from in any manner using these trade-marks on Sheep Shears not manufactured by the plaintiffs.

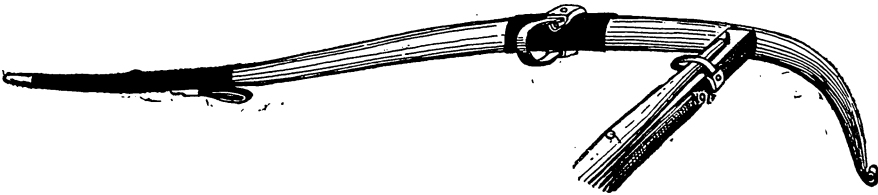


Fig. 5.—Loops as Attached.

silver plate, packed in neatly labeled boxes. The leathers are listed separate from the metal loops, and prices for round leathers are quoted upon application. The metal loops are made for ¼, ⅜, 1 and 1¼ inch straps.

long rim-fire and central-fire rifles that have been shot out or rusted may now be rebores, rifled and chambered for the Ideal cartridges, also .32-.20 barrels, thus converting a discarded and useless weapon into an Ideal rifle. It is added that the

Sheet Metal Pipe Straps.

The Smith & Egge Mfg. Company, Bridgeport, Conn., are putting these goods

except that which is necessary to hold the parts in contact, and that the spring in the sliding head gives the self-adjusting feature to the wrench, enabling it to grip round, square, oval or any irregular shape

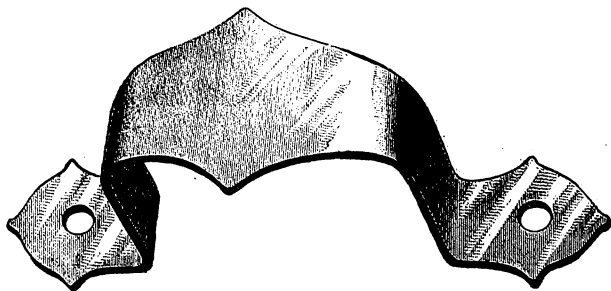


Fig. 1.—Sheet-Metal Pipe Strap.

on the market, as illustrated herewith. The straps are made of sheet metal, nickel-

with equal facility. It is stated that all parts of the wrench are interchangeable.

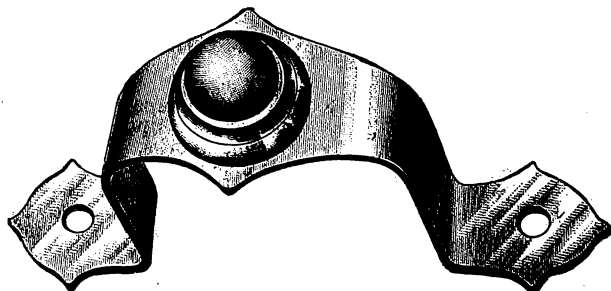
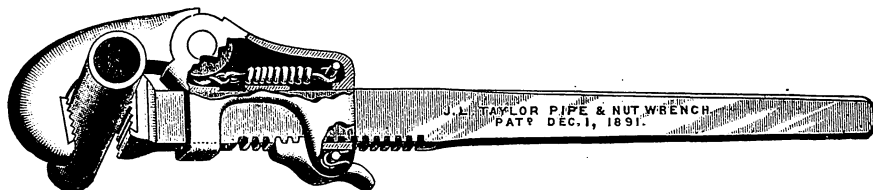


Fig. 2.—Pipe Strap with Rubber Bumper.

plated on brass. They are referred to as being light, of ample strength, and as finished nicely for use on open work. The

The sliding jaw is held in any desired position by means of a multiple-toothed pawl or lock which engages with teeth formed



The Taylor Pipe and Nut Wrench.

point is made that, being light, freight charges are much less than on cast straps. The strap shown in Fig. 1 is made in seven sizes, for pipe from $\frac{3}{8}$ to $1\frac{1}{2}$ inches. Those with bumpers are made in four sizes, for pipe from 1 to $1\frac{1}{2}$ inches.

The Taylor Pipe and Nut Wrench.

Hermann Boker & Co., 101 and 103 Duane street, New York, as sole agents for the manufacturers, are introducing the wrench illustrated herewith. The handle is made of forged steel, as are also the pivoted jaws; the sliding head of air-furnace refined malleable iron and the teeth plates of oil-tempered tool steel. The pivoted head is held up to its work by a spiral spring in the sliding head, and the toothed thumb dog is held in place by a spiral spring on its pivot, as shown by illustration, portions of which are cut away. The teeth plates are detachably secured in dovetailed grooves, so that when desirable to renew the teeth plates, should they become worn or damaged, the old ones may be quickly driven out sideways with hammer and punch, and the new ones driven into position. A light blow of a hammer over each beveled corner locks them in position. The gripping principle is referred to as simple but effective, the wrench gripping its work independent of the spring. The point is made that no strain comes on either spring

upon the under side of the handle; the form of the teeth, together with the fact that several of them are always in use at the same time, gives additional strength. The pawl snaps into place by action of the spring when released, and when raised allows the sliding jaw to be instantly moved along to suit any pipe or object to be gripped. It is claimed that the wrench will grip a pipe and its connection with one setting; that it is quickly adjustable over a wide range by simply pressing the thumb dog, and that the wrench is so proportioned as to give the greatest strength with the least weight. They are finished all over, and are made in five sizes, to take from 0 to $2\frac{1}{2}$ -inch pipe.

Wickwire Brothers have purchased about three acres of land adjoining their present plant at Cortland, N. Y., and have commenced the erection of a two-story brick building thereon, to be used for drawing wire, as well as a main building, which will be 90 x 212 feet. There will also be an engine house, 30 x 60 feet; a boiler house, 24 x 50 feet; a circular annealing house and a circular cleaning house, each 60 feet in diameter. The boiler house will contain six 100 horse-power boilers, and the engine will have between 500 and 600 horse-power. New wire-drawing machines have been ordered and will be ready to be placed in position as soon as the buildings are completed. It is expected that the new plant will be ready by September 1.

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MAY 10, 1893.

The character @ is used to indicate a range of price; thus discount 50%@50%&5% signifies that the goods in question are sold at prices ranging from discount 50 and 10% to discount 50 and 10 and 5%.

Red, case lots.... gr 67¢; small lots 72¢
Blue, case lots.... gr 75¢; small lots 91¢
See also Crayons

Chalk Lines—See Lines.**Checks, Door—**

Unity.....50%

Chisels—**Socket Framing and Firmer**

F. S. & W.....

New Haven.....75&1075&10&10%

Wetherby.....

Ohio Tool Co.....75&75&5%

Douglass.....

Buck Bros.....60&1060&10&5%

Merrill.....30&30&5%

L. & J. White.....

Tanged and Miscellaneous.

Tanged Firmers.....60&60&10%

Butchers.....\$4.75&5.00

Spear & Jackson's.....\$5 to 2

Buck Bros.....30%

Cold Chisels, # D.....15&16

Chucks—

Beach Pat.....each, \$8.00.....20%

Morse's Adjustable, each, \$7.00, 20&20&5%

Danbury.....each, \$6.00, 30&30&5%

Syracuse, Balz Pat.....25%

Graham Patent.....33&3%

Skinner's Patent Chucks.....

Combination Lathe Chucks.....33&3%

Universal Lathe Chucks.....40%

Independent Lathe Chucks.....40%

Drill Chucks.....15%

Union Mfg. Co.....\$8.50, 25%

Victor.....40%

Combination.....40%

Universal.....40%

Independent.....40%

Churns—

Tiffin Union, each, 5 gal. \$3.25; 7 gal., \$3.75; 10 gal., \$4.25.

McDermald Star Barrel Churn, each 6 gal., \$2.60; 10 gal., \$2.75; 15 gal., \$3.00; 20 gal., \$3.25.

Clamps—

R. I. Tool Co.'s Wrought Iron.....25%

Adjustable, Cincinnati.....15&10%

Adjustable, Hammer's.....15&10%

Adjustable, Stearn's.....30&30&10%

Stearn's Adjustable Cabinet and Corner.....30&30&10%

Cabinet, Sargent's.....70&10%

Carriage Makers', Sargent's.....75&75&5%

Carriage Makers', P. S. & W. Co., 40&10%

Eberhard Mfg. Co.....40&5&40&10%

Warner's.....40&10&40&10&5%

Saw Clamps, see Vises, Saw Filers.

Carpenter's, Cincinnati.....25&10%

Barnes' Machinists' Clamps.....33&3%

Cleavers, Butchers'—

Bradley's.....25&30%

L. & J. White.....20&5%

Beatty's.....40&40&5%

New Haven Edge Tool Co.'s.....40%

P. S. & W. Co.....33&25&33&10%

Foster Bros.....30%

Schulte, Lohoff & Co.....40&40&5%

Clips—

Norway, Axle, 1/4 & 5-16.....55&55&5%

2d grade Norway Axle, 1/4 & 5-16.....55&55&5%

Superior Axle Clips.....60&5&60&7%

Norway Spring Bar Clips, 5-16.....60&5&60%

Wrought Iron Felloe Clips.....# D, 5 1/2

Steel Felloe Clips.....# D, 5 1/2

Baker Axle Clips.....25%

Cloth and Netting, Wire

—See Wire, &c.

Cocks, Brass—

Hardware list.....60&2%

Coffee Mills—See Mills, Coffee.**Collars, Dog—**

Chapman Mfg. Company.....50&10&60%

Medford Fruit Goods Co.....40&10&50%

Embossed, Gift, Pope & Steven's list.....50&1%

Leather, Pope & Steven's list.....40%

Brass, Pope & Steven's list.....40%

Combs, Curry—

Fitch's.....50&10&50&10&10%

Rubber, per doz., \$10.00.....25%

American Curry Comb Co.....33&3&40%

Kohler's Magic Oscillating.....# doz., \$2.00

Kohler's Humane.....# doz., \$1.75

Compasses, Dividers &c.

Compasses, Call Co.'s.....65%

Dividers.....50&5%

Callipers, Inside or Outside.....65%

Callipers, Wing.....60%

Callipers, Double.....60%

Callipers, Call's Patent Inside.....65%

Excelsior.....50%

J. Stevens & Co.'s.....25&10%

Starrett's.....

Spring Callipers and Dividers.....25&10%

Lock Callipers and Dividers.....25%

Combination Dividers.....25%

Coolers, Water—

S. & C. Co., 2 gal., \$2.30; 3 gal., \$2.60; 4 gal., \$3.00; 6 gal., \$3.75 each.....33&3%

Coopers' Tools—

—See Tools, Coopers'.

Cord—**Sash—**

Common.....# D, 9&10&10%

Patent, good quality.....# D, 11&12%

White Cotton Braided, fair.....# D, 24&25%

Common Russia Sash.....# D, 12&13%

Patent Russia Sash.....# D, 13&14%

Cable Laid Italian Sash.....# D, 19&20%

India Cable Laid Sash.....# D, 11&12%

Silver Lake.....

A quality, White, 50#.....25%

A quality, Drab, 50#.....25%

B quality, White, 30#.....10%

B quality, Drab, 30#.....10%

Sylvan Spring, Extra Braided, White.....27&28%

Sylvan Spring, Extra Braided, Drab.....33&3%

Spartan Idem, Braided, White.....27&28%

Egyptian, India Hemp, Braided.....26%

Massachusetts, White.....29%

Samson.....

Braided, White Cotton.....# D, 37%

Braided, Drab Cotton.....# D, 42%

Braided, Italian Hemp.....# D, 40%

Braided, Linen.....# D, 66%

Tate's Solid Braided—

Hercules, White.....# D, 25%

Hercules, Drab.....# D, 30%

Economy Drab.....# D, 27%

Economy White.....# D, 22%

Oswan.....

Braided, Giant, White, # D, 30#.....20%

Braided, Giant, Drab and Fancy, # D, 35#.....10%

Braided, Crown White, # D, 50#.....50%

Braided, Crown Drab and Fancy, # D, 54#.....30%

Wire Picture—

Braided or Twisted.....80&5&80&15%

Corkscrews—See Screws, Cork.**Corn Knives and Cutters**

—See Knives, Corn.

Crackers, Nut—

Table (H. & B. Mfg. Co.).....40%

Blake's Pattern, # doz., \$2.00.....10%

Turner & Seymour Mfg. Co.....50%

Acme.....

Jannaped, # gro., \$30.....50%

Nickel Plated, # gro. \$30.....10%

Cradles—

Grain.....50&2&50&5&2%

Crays—

White Crays, # gross.....7&8%

D. M. Stewart Mfg. Co.....

Rolling Mill, # gross, \$1.75.....25%

Railroad, # gross, 2.50.....25%

Soapstone Pencils, # gross, 1.00.....25%

See also Chalk.

Creamery Pails—See Pails, Creamery.**Crow Bars—See Bars, Crow.****Curry Combs—**

—See Combs, Curry.

Curtain Pins—

—See Pins, Curtain.

Cutters—**Meat—**

Dixon's, # doz.....40&5%

Nos. 1 2 3 4

\$14.00 \$17.00 \$19.00 \$30.00

Woodruff's, # doz.....40&5%

Nos. 100 150

\$15.00 \$18.00

Hale's Pattern, # doz.....70%

Nos. 11 12 13

\$27.00 \$33.00 \$45.00

American.....80%

Nos. 1 2 3 4 5 6 80

Enterprise.....\$5 \$7 \$10 \$25 \$50 \$80

Nos. 10 12 22 32 42

Each.....\$3 \$2.50 \$4 \$6 \$15

Great American Meat Cutter.....30&30&5%

Nos. 112 116 118 120 122

Each.....\$2.00 \$2.75 \$3.00 \$3.50 \$4.00

Miles' Challenge, # doz.....\$5&4&5&10%

Nos. 1 2 3

\$22.00 \$30.00 \$40.00

Home No. 1, # doz., \$26.00.....55&10%

Draw Cut, each:

Nos. 5 2 6 8

\$50 \$75 \$80 \$225.....20&25%

Beef Shavers (Enterise).....50%

Little Giant (P. S. & W. Co.).....50%

Chadborn's Smoked Beef Cutter, # doz., \$68.00

Tobacco

Champion.....20&10&30%

All Iron.....# doz., \$4.25

Ashua Lock Co.'s, # doz., \$18.00, 60&5%

Wain's.....# doz., \$24.00, 50&10%

Sargent's.....# doz., \$24.00, 50&10%

Acme.....# doz., \$20.00, 40%

Washer—

Smith's Pat.....# doz., \$12.00, 20&10&10%

Johnson's.....# doz., \$11.00, 33&3%

Penny's.....# doz., Pol. \$14; Jap'd, \$16, 55%

Appleton's.....# doz., \$18.00, 60&10%

Bonney's.....# doz., 30&10%

Cincinnati.....25&10%

Dampers, &c.—

Dampers, Buffalo.....40&10%

Buffalo Damper Clips.....40&10%

Crown Damper.....40%

Excelsior.....40&10%

Diggers, Post Hole, &c.—

Samson, # doz., \$34.00.....25&25&10%

Fletcher Post Hole Augers, # doz., \$36.00, 20&20&10%

Eureka Diggers.....# doz., \$12.00&\$13.00

Vaughan's Post Hole Auger, # doz., \$8.50&\$9.50

Kohler's Little Giant.....# doz., \$18.00

Kohler's Hercules.....# doz., \$14.00

Kohler's Invincible.....# doz., \$12.00

Kohler's New Champion.....# doz., \$8.00

Schneider.....# doz., \$18.00

Cronk's Post Bars, # doz., \$60.00, 50&50&10%

Gibb's Post Hole Digger.....# doz., \$15.00

Gibb's National.....# doz., \$12.00

Gibb's Columbia.....# doz., \$13.00

Gibb's Imperial.....# doz., \$7.50

Shimer's Hollow Handle.....# doz., \$24.00, 50%

Dividers—See Compasses.**Dog Collars—See Collars, Dog.****Door Checks—**

—See Checks, Door.

Door Springs—

—See Springs, Door.

Drawers.

Money, # doz.....\$13&\$20

Drawing Knives—

—See Knives, Drawing.

Drills and Drill Stocks—

Blacksmith's.....each \$1.75

Blacksmith's Self-Feeding, each \$7.50, 20%

Preast, P. S. & W.....40&10%

Preast, Wilson's.....30&5%

Preast, Millers Falls.....each \$3.00, 25%

Preast, Bartholomew's.....each \$2.50

Ratchet, Merrill's.....20&20&40%

Ratchet, Ingersoll's.....25%

Ratchet, Parker's.....20&20&5%

Ratchet, Whitney's.....20&10%

Ratchet, Weston's.....20&25%

Ratchet, Moore's Triple Action.....20&10%

Ratchet, Curtis & Curtis.....30%

Whitney's Hand Drill, Plain, \$11.00.....

Adjustable, \$12.00.....20&10%

Automatic Boring Tools.....\$1.75&\$1.85

Chicopee Automatic Drill.....20&10%

Twist Drills—

Cleveland.....50&10&10%

Diamond, W. & B.....50&10&10%

Graham's Pat. Groove Shank.....50&10&10%

Morse.....50&10&10%

New Process.....50&10&10%

Standard.....50&10&10%

Syracuse (Meta list).....50&10%

Drill Bits or Bit Stock

Drills—See Augers and Bits.

Drill Chucks—See Chucks.**Dripping Pans—**

—See Pans, Dripping.

Drivers, Screw—

Douglass Mfg. Co.....20&20&10%

Disston.....50%

Buck Bros.....30%

Stanley R. & L. Co.'s.....

No. 64, Varished Handles.....65&10%

No. 86.....70&10%

Sargent & Co.'s.....

No. 1, Forged Blade.....60&10&10%

Nos. 4 and 60.....60&10&10%

P. S. & W.....70%

Knapp & Cowies.....

No. 1.....60&20&70%

No. 2.....60&10&10&70&5%

No. 3.....60&5&60&10%

Nos. 4

Brittan, Graham & Mathes, list Jan. 1890.
 Plate.....60&10&10%
 Barnes Mfg. Co.....40&40&10%
 Sale.....net prices
 Deits Flat Key.....15%
 Romer's Night Latches.....15%
 Brooklyn Latches.....50&10%
 Warner's Burglar Proof. # doz. \$8.00, 50%

Padlocks—

List June 10, 1891.....50&2%
 Norwich Lock Mfg. Co., old list.....50&2%
 Yale Lock Mfg. Co.'s.....net prices
 Eagle.....40%
 Eureka, Eagle Lock Co.....40&2%
 Romer's Nos. 0 to 91.....30%
 Romer's Scandinavian, &c., Nos. 100 to 506.....15%
 A. E. Dettz.....40%
 Champion Padlocks.....40%
 Hotchkiss.....30%
 Star.....60%
 Horseshoe.....# doz \$9.50, 60&10%
 Barnes Mfg. Co.....40&40&10%
 No. 8.....30%
 Scandinavian.....90&40%
 E. T. Fraim.....90&10%
 Nos. 119, 120, 130 and 140.....90&10%
 Other Nos.....65%
 Ames Sword Co. up to No. 160.....40%
 Ames Sword Co. above No. 160.....50%
 Slaymaker, Barry & Co.....90&5%
 No. 1010 line.....50&5%
 No. 41 line.....60&5%
 No. 61 line.....60&5%
 No. 81 line.....75&10%

Sash, &c.—

Clark's No. 1, \$10; No. 2, \$8 gr.....33%
 Ferguson's.....33%
 Victor.....60&10&2%
 Walker's.....10%
 Attwell Mfg. Co.....25&33%
 Reading.....60%
 Hammond's Window Springs.....40%
 Common Sense, Jap'd, Cop'd and Brzd.....gr \$4.00
 Common Sense, Nickel Plated.....gr \$10.00
 Universal.....30%
 Kempshall's Gravity.....60&10&10%
 Corbin's Daisy, list Feb. 15, 1888.....70%
 Payson's Perfect.....60&10&10%
 Huginin's Sash Balances.....25&5&2%
 Huginin's New Sash Locks.....25&5&2%
 Fish (Liesche's pat.), No. 100, gr, \$8.....60%
 No. 105, gr, \$10.....50%
 Davis, Bronze, Barnes Mfg. Co.....60%
 Champion Safety list January, 1893, 70&5%
 Security.....70%
 Giant, list Jan., 1892.....70&5%
 Wolcott's.....60&10&5%
 Monarch.....50%

Lumber Tools—

See Tools, Lumber.

Lustro—

Four-ounce bottles.....# doz, \$1.75; # gross.....\$17.00

Machines.**Boring—**

Without Augers. Upright. Angular.
 Douglas.....\$5.50 \$8.75.....50%
 Ewell's, Rice's Pat.....5.50 8.75, 40&10&10%
 Jennings.....5.50 6.75, 45&45&10%
 Other Machines.....2.35 2.75.....50%
 Phillips' Patent with Augur.....7.00 7.50.....50%
 Miller's Falls.....7.50.....25%

Fluting—

Knox, 4 1/2-inch Rolls.....\$3.25 each } 35%
 Knox, 6-inch Rolls.....\$3.50 each }
 Eagle, 3 1/2-inch Rolls, \$2.15.....35%
 Eagle, 5 1/2-inch Rolls, \$2.85.....35%
 Crown, 4 1/2 in., \$3.50; 6 in., \$4.00; 8 in., \$4.50 each.....35%
 Crown Jewel, 6 in.....\$3.50 each, 35%
 American, 6 in., \$5.00; 6 in., \$3.50; 7 in., \$4.50 each.....35%
 Domestic Fluter.....each, \$1.50
 Geneva Hand Fluter, White Metal.....# doz \$12, 25%
 Crown Hand Fluter, No. 1, \$15.00; 2, \$12.50; 3, \$10.00; 4, \$8.25.....30%
 Shepard Hand Fluter, No. 85, per doz.....\$15.50.....40%
 Shepard Hand Fluter, No. 110, # doz.....\$11.00.....40%
 Shepard Hand Fluter No. 95, # doz.....\$8.00.....40%
 Combined Fluter and Sad Iron.....# doz \$15.00.....30%

Hoisting—

Moore's Hand Hoist, with Lock Brake.....20%
 Moore's Differential Pulley Block.....40%
 Energy's Mfg. Co.'s.....25%
 Sure Grip Steel Tackle Blocks.....25%

Washing—

Anthony Wayne, # doz, No. 1, \$42; No. 2, \$38; No. 3, \$42.....# doz \$38.00
 Wayne American.....# doz \$38.00
 Western Star # doz, No. 2, \$30; No. 3, \$30.....# doz \$54.00
 Welsell.....# doz \$42.00
 Fair and Square.....# doz \$42.00

Mallets—

Hickory.....20&10&20&10&10%
 Lignumvitae.....20&10&20&10&10%
 B. & L. Block Co., Hickory & L. V.....30&30&10%

Mattocks—Regular list.

60&10&60&10&25%

Measures—

Standard Fiberware, No. 1, peck, # dozen, \$3.50; 1/4-peck, \$3.00.

Meat Cutters—

See Cutters, Meat.

Menders, Harness—

Per doz.....\$2.00

Milk Cans—See Cans, Milk.**Mills— Coffee—**

Box and Side, List Jan. 1, 1888, 80&90&10%
 Net prices are offered made which are lower than above discount.
 American Enterprise Mfg. Co., list Jan. 17, 1893.....20%
 The Swift, Lane Bros.....30%

Mincing Knives—

See Knives, Mincing.

Molasses Cates—

See Gates, Molasses.

Money Drawers—

See Drawers, Money.

Mowers, Lawn—

Best Machines: 10-in., \$4; 12-in., \$4.50; 14-in., \$5; 16 in., \$5.50; 18-in., \$6
 Low-Grade Machines:
 10-in. \$3; 12-in., \$3.25 14-in., \$3.50 each

Muzzles—

Safety.....# doz, \$3.00, 25%

Nails.—

Cut and Wire. See Trade Report.
 Wire Nails, Papered.
 Association list, May 1, '92, 80&10&10&5%
 Tack Mfrs.' list.....70&5&10%
 Hungarian, Finishing, Upholsterers', &c. See Tacks.

Horse—

Nos. 6 7 8 9 10
 American.....89% 89% 89% 89%.....net
 Ausable.....28% 26% 25% 24% 23%
 Clinton, Fin.....19% 17% 16% 15% 14% 30&10%
 Essex.....28% 26% 25% 24% 23%
 Lyra.....19% 17% 16% 15% 14% 40&10%
 Snowden.....19% 17% 16% 15% 14% 40&10%
 Vulcan.....23% 21% 20% 19% 18%.....25%
 Northwest'n.....25% 23% 22% 21% 20% 25&25&5%
 A. C.....25% 23% 22% 21% 20% 25&10&33%&5%
 C. B. K.....25% 23% 22% 21% 20% 33%&33%&10%
 Maud S.....25% 23% 22% 21% 20% 40&10&5%
 Champlain.....28% 26% 25% 24% 23% 40&5&5&2%
 Saranac.....23% 21% 20% 19% 18% 40&5%
 Champlain.....25% 23% 22% 21% 20% 10&10&10%
 Capewell.....19% 18% 17% 16% 15% 10&5%
 Western.....23% 21% 20% 19% 18% 35%
 Empire Bronzed.....13&14 %

Picture—

Brass Head, Sargent's list.....60&60&10%
 Brass Head, Combination list.....60&10%
 Porcelain Head, Sargent's list.....60&10&10%
 Porcelain Head, Combination list.....40&10%
 Niles' Patent.....40%

Nail Pullers—See Pullers, Nail.**Nail Sets—See Sets, Nail.****Nut Crackers—**

See Crackers, Nut.

Nuts—List Dec. 18, 1889.

Hot Pressed.....Square. Hex.
 Cold Punched.....5.80¢ 6.50¢ off list
 In packages of 100 lb, add 1-10¢ off lb net; in packages less than 100 lb, add 1/4¢ lb, net.

Oakum—

Best or Government.....# doz 6% 7% 4%
 U. S. Navy.....# doz 5% 6% 4%
 Navy.....# doz 5% 6% 4%

Oil Tanks—See Tanks, Oil.**Oilers—**

Zinc and Tin.....65&10&70&5%
 Brass and Copper.....50&10&50&10&5%
 Malleable, Hammers' Improved, No. 1, \$5.00; No. 2, \$4.00; No. 3, \$4.40 # doz 10&10&5%
 Malleable, Hammers' Old Pattern, same list.....45%
 Prior's Pat. or "Paragon" Zinc.....60&10&10%
 Prior's Pat. or "Paragon" Brass.....50%
 Olmstead's Tin and Zinc.....50%
 Olmstead's Brass and Copper.....50%
 Broughton's Zinc.....60%
 Broughton's Brass.....50%
 Steel, Draper & Williams.....50%

Openers, Can—

Messenger's Comet.....# doz \$3.00, 25%
 Duplex.....# doz \$2.75, 15&20%
 Lyman's.....# doz \$3.75, 20%
 No. 4, French.....# doz \$2.25, 65&60%
 No. 5, Iron Handle.....gr \$8.00, 45&50%
 Eureka.....# doz \$2.50, 10%
 Sardinia Scissors.....# doz \$2.75, 35&30%
 Star.....# doz \$2.75
 Sprague, No. 1, \$2.00; 2, \$2.25; 3, \$2.50.....60%
 Excelsior, No. 1 \$2.50; No. 2, \$1.50.....40%
 World's Best # gross, No. 1, \$12.00; No. 2, \$24.00; No. 3, \$36.00.....60&10%
 Universal # doz \$3.00.....55&55%
 Domestic # doz \$2.00.....45%
 Champion # doz \$2.00.....50%

Packing, Steam—**Rubber—**

Standard.....70&70&10%
 Extra.....60&60&25%
 N. Y. B. & P. Co., Standard.....50%
 N. Y. B. & P. Co., Empire.....60%
 N. Y. B. & P. Co., Salamander.....25%
 Jenkins' Standard, # doz 80¢.....25&25&5%

Miscellaneous—

American Packing.....10¢&11¢ # doz
 Italian Packing.....13¢&14¢ # doz
 Italian Packing.....13¢&14¢ # doz
 Cotton Packing.....15¢&17¢ # doz
 Jute.....15¢&17¢ # doz

Pails—

S. S. & Co.: 18-qt., \$7.00; 20-qt., \$7.25 per doz.....5%

Galvanized—

Quarts 10 12 14
 Hill's Light Weight, # doz. \$2.75 3.00 3.25
 Hill's Heavy Weight, # doz. 3.00 3.25 3.75
 Helwig's.....2.50 2.75 3.00
 Sidney Shepard & Co.....2.35 2.85 3.05
 Iron Glad.....2.50 2.75 3.00
 Fire Buckets.....2.75 3.25 3.50
 Buckets—See Well Buckets.

Indurated Fiber Ware—25%

Star Pails, 12 qt.....# doz \$4.20
 Mills, 14 qt.....# doz \$5.40
 Stable, 14 qt.....# doz \$3.00
 Fire Pails, deep.....# doz \$4.80
 Fire Pails, round bottom.....# doz \$5.40

Standard Fiber Ware—

Water Pails, 12 qt., # doz. \$3.60 Dec'd
 Dairy Pails, 14 qt., # doz. 4.00 4.50
 Fire Pails, No. 1, 12 qt., # doz. 4.00 4.50
 Fire Pails, No. 2, 14 qt., # doz. 4.50 6.00
 Sugar Pails.....5.50
 Horse Pails.....4.50
 Buggy Pails.....3.50
 Slop Jars (bal. trap).....7.50 8.50
 Chamber Pails, 14 qt.....6.00 7.00

Pans—

Small sizes.....# doz 5 1/2¢
 Large sizes.....# doz 6 1/2¢
 Silver & Co. (Covered).....40%

Fry—

Standard List:
 No. 1.....\$3.75 \$4.25 4.75 \$5.25
 No. 2.....5 6 7 8
 # doz.....\$6.00 \$7.00 \$8.00 \$9.00
 Polished, regular goods.....75¢&75¢&10%
 Aome Fry Pans.....60%&60%

Dust—

Steel Edge, No. 1.....# doz \$1.75

Roasting and Baking—

Columbia, S. S. & Co.: Nos. 10, \$2; 20, \$2.25; 30, \$2.50 each.....50%

Paper and Cloth—

Sand and Emery—
 List April 19, 1888.....60&10&50&10&5%
 Sibley's Emery and Crocus Cloth.....30%

Parers—**Apple—**

Advance.....# doz \$4.75
 Baldwin.....# doz 5.25
 Bonanza.....each 5.00
 Dalse.....# doz 4.00
 Dalse.....each 7.50
 Euphrosia.....# doz 4.25
 Eureka, 1888.....each 16.00
 Family Bay State.....# doz 12.00
 Favorite.....# doz 5.00
 Gold Medal.....# doz 4.00
 Ideal.....# doz 4.00
 Little Star Bay State.....# doz 27.00&30.00
 Monarch.....# doz 4.50
 New Lightning.....# doz 5.50
 Oriole.....# doz 4.00
 Penn.....# doz 4.00
 Perfection.....# doz 4.00
 Pomona.....# doz 4.00
 Rocking Table.....# doz 6.00
 Turn Table.....# doz 13.50
 Victor.....# doz 4.00
 Waverly.....# doz 4.00
 White Mountain.....# doz 4.00
 72.....# doz 4.25
 78.....# doz 7.00

Potato—

White Mountain.....# doz \$4.50
 Antrim Combination.....# doz \$5.50
 Saratoga.....# doz \$3.50

Pencils—

Fabron Carpenters'.....high list 50¢
 Faber's Round Gilt.....# gro \$5.25
 Dixon's Lead.....# gro \$5.50
 Dixon's Lumber.....# gro \$6.75
 Dixon's Carpenters'.....10%

Pencils, Soapstone—

See Crayons.

Pickers, Fruit—

Prize Fruit Pickers.....50%

Picks—

Railroad Adze Eye, 5 to 6, \$12.00; 6 to 7, \$13.00.....60&10&60&10&10%

Picture Nails—

See Nails, Picture.

Pinking Irons—

See Irons, Pinking.

Pins—

Humason, Beckley & Co.'s.....# doz \$1.00
 Sargent & Co.'s, \$17 and \$18.....60&10%
 Peck, Stow & W. Co.....60&10&50&10&5%

Curtain—

Silvered Glass.....net
 White Enamel.....net

Escutcheon—

Iron, list Nov. 11, 1885.....50&10&50&10&5%
 Brass.....60&60&5%

Pipe, Wrought Iron—

List April 13, 1893.

1 1/2 and under, Plain.....62%&10%
 1 1/2 and under, Galv.....62%&10%
 1 1/2 and over, Plain.....70&10%
 1 1/2 and over, Galv.....60&10%
 Boiler Tubes, list Oct. 24, 1892.....65&10%
 Casing, list Nov. 16, 1892.....62%&10%
 Insulated Joints Casing, list Nov. 16, 1892.....47%&5%
 Steel Boiler Tubes.....27%&5%
 Cold Drawn Seamless Steel Tubing.....50%

Planes and Plane Irons—**Wood Planes—**

Molding.....40&40&10%
 Bench, First quality.....45&45&10%
 Bench, Second quality.....60&60&10%
 Bailey's (Stanley R. & L. Co.).....50&10%

Iron Planes—

Bailey's (Stanley R. & L. Co.).....50&10%
 Miscellaneous Planes (Stanley R. & L. Co.).....25&10%
 Steers' Iron Planes.....50&50&5%
 Meriden Mal, Iron Co.'s.....50&50&5%
 Davis' Iron Planes.....50&50&5%
 Birmingham Plane Co.'s.....60&60&5%
 T. & G. Co.'s Self-Setting.....20&10&10%
 Chaplain's Iron Planes.....50&50&5%
 Sargent's.....60&60&10%
 Standard Tool Co.....50&50&5%

Plane Irons—

Butcher's.....\$5.00&\$5.25 to \$6
 Buck Bros.....30%
 Auburn Thistle.....} 50&10%
 Ohio.....}
 Sandusky.....25%
 L. & J. White.....50&10%
 Stanley R. & L. Co.....50&10%

Plates—

Felloe.....# doz 6 1/2¢&5 1/2¢

Pliers and Nippers—

Button's Patent.....60%
 Hall's No. 2, 5 in., \$13.50; No. 4, 7 in., \$21.00 # doz.....40%
 Humason & Beckley Mfg. Co.....50&50&10%
 Lindsay's Giant.....58%
 Gas Pliers.....60%
 Gas Pliers, Custar's Nickel Plated.....60&5%
 Eureka Pliers and Nippers.....40%
 Russell's Parallel.....25%
 P. S. & W. Cast Steel.....50%
 P. S. & W. Timmers' Cutting Nippers.....add 6%
 Carew's Pat. Wire Cutters.....20%
 Morrill's Parallel, # doz, \$12.00.....30&5%
 Cronk's 5 in., \$15.00; 10 in.....\$20
 Cronk's Burton Pattern.....60&10&60%
 Cronk's Carrier Pliers.....60&60&5%

Plumbs and Levels—

Regular list.....75&10&75&10&5%
 Stanley's Duplex.....20&10%
 Stanley's Handy.....20&10%
 Disston's.....50%
 Cook's.....40&10%
 Pocket Levels.....70&10&70&10&10%
 Davis Iron Levels.....40&10%

Poachers, Egg—

Buffalo Steam Egg Poachers, # doz, No. 1, \$6.00; No. 2, \$9.00.....35%
 Slicer & Co., 6-Ring, # doz, \$4.00; 3-Ring.....\$2.00

Pokes, Animal—

Bishop & I. X. L.....# doz \$6.00
 Bishop's Monarch.....# doz \$4.50
 Bishop's Pioneer.....# doz \$4.00
 Bishop's American.....# doz \$3.75
 Eagle, Double Stale.....# doz \$5.00
 Eagle, Single Stale.....# doz \$3.75
 Buckeye, Single Stale.....# doz \$2.75
 Bolding.....# doz \$6.00
 Metallo Horse Poke.....# doz, \$6.00

Police Goods—

R. I. Tool Co., Handcuffs, \$15.00 # doz 10%
 R. I. Tool Co., Leg Irons, \$25.00 # doz 10%
 Tower's.....25%
 Daley's Improved Handcuffs; 2 Hands, Polished, # doz, \$48.00; Nickleed, \$57.00; 3 hands, Polished, # doz, \$72.00; Nickleed, \$84.00.....25%
 J. P. Lovell's Police Goods.....25%

Polish—**Metal—**

Prestolline.....50%
 Prestolline Paste.....33%
 Gaston's Silver Compound.....33%&33%

Stove—

Joseph Dixon's.....# gro, \$6.00, 10%
 Gem.....# gro, \$4.50, 10%
 Gold Medal.....# gro, \$6.00, 25%
 Lustron.....# gro, \$4.75
 Ruby.....# gro, \$3.75
 Rising Sun, 6 gro lots.....# gro \$5.50
 Dixon's Plumber.....# doz \$4
 Boynton's Noon Day.....# gro \$13.00
 Parlor Pride Stove Enamel, # doz, Yates' Liquid, 2 3 5 10 gal # gal, \$.80 .70 .60 .50
 Yates Standard Paste Polish, 10 lb cans, # doz \$12.50
 Jet Black.....# gro \$3.50
 Japanese.....# gro \$3.50
 Fireside.....# gro \$3.50
 Diamond O. K. Enamel.....# gro \$19.00
 Bonnell's Liquid Stove Polish, # gro \$9.00
 Bonnell's Paste Stove Polish, # gro \$6.00
 Black Eagle Benzine Paste, 5 and 10 lb cans.....12%
 Black Jack Water Paste, 5 and 10 lb cans.....12%
 Nickel Plate Paste.....# gro \$6.00
 Crown Paste.....# gro \$7.2

Presses—**Fruit and Jelly—**

Enterprise Mfg. Co. 25¢
 Curtis Hammer 1 doz. \$3.50
 Shepard's Queen City 40¢
 Silver & Co. 1 doz. \$2.75

Pruning Hooks and Shears—See Shears.**Pullers Nail—**

Seranton 1 doz. \$18.00, 83¢
 Curtis Hammer 1 doz. \$3.50
 Giant, No. 1 1 doz. \$18.00, 10¢
 Giant, No. 2 1 doz. \$15.00, 10¢
 Feliciano 1 doz. \$20.00, 25¢
 Eclipse Each \$2.00, net
 Economy 1 doz. \$3.00

Pulleys—

Hot House, Awning, & Co. 60¢/70¢
 Japanned Screw 60¢/10¢
 Brass Screw 60¢/10¢
 Japanned Side 60¢/10¢
 Japanned Clothes Line 60¢/10¢
 Moore's Sash, Anti-Friction 50¢
 Hay Fork, Solid Eye, \$4.00; Swivel, \$4.50 50¢/10¢/50¢/10¢
 Hay Fork, "Anti-Friction," 5 in. solid, \$5.70 50¢
 Hay Fork, "F" Common and Patent, Bushed 20¢
 Hay Fork, Tarbox Pat. Iron 20¢
 Hay Fork, Reed's Self-Lubricating 60¢
 Shade Rack 45¢
 Tackle Blocks—See Blocks.
 Moore's Anti-Friction 5 in. Wheel, \$12.00 40¢
 Shepard's Niagara, No. 25, 1 doz 23¢ net
 Sash (Auger Mortise) 60¢
 Common Sense 60¢
 Empire 60¢
 Ideal, Nos. 2, 4, 10 & 15, 1 doz net 20¢
 Acme 20¢
 On bbl. lots extra 5¢.
 Ideal, Nos. 25 and 55, 1 doz. 22¢ net.

Pumps—

Olester, Best Makers 60¢/60¢/10¢
 Pitcher Spout, Best Makers 60¢/70¢
 Pitcher Spout, Cheaper G'ds. 75¢/75¢/10¢

Punches—

Saddler's or Drive, good, 1 doz., 60¢/65¢
 Bemis & Call Co.'s Cast Steel Drive, 50¢/55¢
 Bemis & Call Co.'s Springfield Socket, 50¢
 Spring, good quality, 1 doz., \$2.50/60¢/50¢
 Spring, Leach's Pat. 15¢
 Bemis & Call Co.'s Spring 60¢/55¢
 Bemis & Call Co.'s Check 55¢
 Solid Timmers, P., S. & W. Co., 1 doz., \$1.44 55¢
 Timmers' Hollow Punches, P., S. & W. Co., 1 doz. 20¢/25¢
 Rice Hand Punches 15¢
 Avery's Revolving 40¢
 Avery's Sawset and Punch—See Sawsets

Rail—

Sliding Door, Wrt Brass 1 doz. \$5, 40¢
 Sliding Door, Wrt Iron, Ft. 1 doz. \$4, 40¢
 Sliding Door, Iron, Painted, Ft. 1 doz. \$4, 40¢
 Barn Door, Light, In. 3/4 1 doz. \$2.00, 2.50, 3.10, 10¢
 B. D. for N. E. Hangers Small, Med. Large.
 Per 100 feet \$3.15, 2.70, 3.25 Net
 Terry's Steel Rail 1 doz. \$7.00, 50¢/25¢
 Victor Track Rail, 7 1/2 ft. 50¢/25¢
 Carrier, double braced, Steel Rail, 1 foot 35¢/40¢
 Moore's Wrought Iron 25¢
 Moody Steel Rail, 1 ft. 5 1/2 45¢

Rakes—

Cast Steel, Association G'ds. 70¢/70¢/50¢/25¢
 Cast Steel, outside G'ds. 70¢/70¢/50¢/25¢
 Malleable 70¢/70¢/50¢
 Gibbs' Lawn Rake 1 doz. \$4.90
 Gibbs' Canton Lawn Rake 1 doz. \$3.75
 Gibbs' Acme Lawn Rake 1 doz. \$4.75
 Gibbs' Favorite Lawn Rake 1 doz. \$3.90
 Gibbs' Crown Lawn Rake, No. 1 1 doz. \$4.00
 Onelda Lawn Rake 1 doz. \$3.00
 Fort Madison Prize Bow Brace and Peerless 65¢
 Fort Madison Steel Tooth Lawn Rake, \$3.00 25¢

Razors—

J. R. Torrey Razor Co. 20¢
 Westenholm and Butler, \$10 to \$20 10¢
 Jordan's A.A.A. new list Net
 Jordan's Old Faithful, new list Net
 Galvanic 1 doz. \$15.00
 Electric Cutlery Co. Net
 Campbell Cutlery Co. 50¢

Razor Straps—

See Straps, Razor.

Rings and Ringers—**Bull Rings—**

Union Nut Co. 55¢
 Sargent's 75¢/10¢
 Eotchkies' low list 30¢
 Humason, Beckley & Co.'s 70¢/10¢
 Peck, Stow & W. Co.'s 50¢/10¢/50¢/10¢
 Ellrich Hdwy. Co., White Metal, low list, 50¢/50¢/10¢

Hog—

Top of the Hill Ringers 1 doz \$2.00
 Top of the Hill Ringers 1 doz \$1.25
 Hill's Improved Ringers 1 doz \$1.25
 Hill's Old Style Ringers 1 doz \$3.00
 Hill's Tongs 1 doz \$3.00
 Perfect Rings 1 doz \$1.50
 Perfect Ringers 1 doz \$2.15/25¢
 Blair's Hog Ringers 1 doz \$2.00
 Blair's Hog Ringers 1 doz \$0.90/\$1.00
 Champion Ringers 1 doz \$3.00
 Champion Ringers, Dou 1 doz \$2.25
 Brown's Ringers 1 doz \$2.00
 Brown's Ringers 1 doz \$1.15/\$1.25
 Electric Hog Ringers 1 doz \$1.50
 Electric Hog Ringers 1 doz \$2.00
 Major Ringers 1 doz \$1.25
 Major Ringers 1 doz \$2.00

Rivets and Burrs—

Iron, list Nov. 17, '87 60¢/10¢
 Copper 60¢/10¢
 Coppered Iron Bettina Brand 40¢

Rivet Sets—See Sets.**Roasting and Baking Pans—See Pans, Roasting and Baking.****Rods—**

Star, Brass 25¢/30¢
 Star, Black Walnut 1 doz 40¢

Rollers—

Barn Door, Sargent's list 60¢/10¢/10¢
 Acme Moore's Anti-Friction 55¢
 Union Barn Door Roller 70¢
 Thompson Mfg. Co.'s Lawn Rollers 30¢

Rope—The following prices are f.o.b., New York or factory, and are shaded 1/4¢/1/4¢ on large lots; terms, 1 1/2% for cash.

Manilla, 7-16 in. diam. and larger 9 1/2¢
 Manilla, 1/4 in. and 5-16 in. 10 1/2¢
 Manilla, Tarred Rope 9 1/2¢
 Manilla, Hay Rope 7 1/2¢
 Sisal, 7-16 in. and larger 7 1/2¢
 Sisal, 1/4 in. and 5-16 in. 8 1/2¢
 Sisal, Hay Rope 7 1/2¢
 Sisal, Tarred Rope 7 1/2¢
 Sisal, Medium Lath Yarn 7 1/2¢
 New Zealand, 7-16 in. and larger 7 1/2¢
 New Zealand, 1/4 in. and 5-16 in. 8 1/2¢
 New Zealand, Hay Rope 7 1/2¢
 New Zealand, Tarred Rope 7 1/2¢
 Cotton Rope 13 1/2¢/10¢
 Jute Rope 6 1/2¢/10¢

Wire—

List February, 1892. All kinds. 45¢

Rules—

Boxwood 80¢/10¢/10¢
 Ivory 50¢/10¢
 Starrett's Steel Rules and Straight Edges 25¢/10¢

Sad Irons—See Irons, Sad.**Sand and Emery Paper and Cloth—**

See Paper and Cloth.

Sash Cord—See Cord, Sash.**Sash Locks—See Locks, Sash.****Sash Weights—**

See Weights, Sash.

Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage.**Saws—**The following prices are generally cut by jobbers.

Diston's Circular 45¢/45¢/50¢
 Diston's Cross Cut, list Jan. 1, '93, 40¢/10¢
 Diston's Hand 25¢
 Woodrough & McParlin.
 Hand, Panel and Rip 25¢/10¢
 Cross Cuts, list Jan. 1, 1893. 45¢/10¢
 Wheeler, Madden & Clemson Mfg. Co.
 Hand, Panel and Rip 30¢/10¢
 Cross Cuts, list Jan. 1, 1893. 45¢/10¢
 Atkins' Circular 50¢
 Atkins' Cross Cuts, new list, 40¢/40¢/10¢
 Atkins' Mulay, Mill and Drag 40¢
 Atkins' One-Man Saw 40¢
 Peace Circular and Mill 45¢/45¢/50¢
 Peace Hand Panel and Rip 25¢/25¢/50¢
 Peace Cross Cuts, list Jan. 1, '93. 45¢/10¢
 Richardson's Circular and Mill, 45¢/45¢/50¢
 Richardson's X Cuts, list Jan. 1, '93, 45¢/10¢
 Richardson's Hand, &c. 25¢/25¢/50¢
 C. E. Jennings & Co.'s brand 25¢

Hack Saws—

Griffin's, complete 40¢/10¢/50¢
 Griffin's Hack Saw Blades 40¢/10¢/50¢
 Star Hack Saws and Blades 25¢
 Eureka and Crescent 25¢

Scroll—

Lester, complete, \$10.00 25¢
 Rogers, complete, \$4.00 25¢
 Barnes' Builders' and Cab Makers' \$15, 25¢
 Barnes' Scroll Saw Blades 35¢

Saw Frames—

See Frames, Saw.

Saw Sets—See Sets, Saw.**Saw Tools—See Tools, Saw.****Scales—**

Hatch, Counter, No. 171, good quality, 1 doz \$18.00/\$14.00
 Hatch, Tea, No. 161 1 doz \$8.50/\$7.00
 Union Platform, Plain \$2.00/\$2.20
 Union Platform, Striped \$2.40/\$2.50
 Chatillon's Grocers' Trip Scales 50¢
 Chatillon's Eureka 25¢
 Chatillon's Favorite 40¢
 Chatillon's Turnbills 30¢/30¢/10¢
 Richle Bros' Platform 40¢

Scale Beams—

See Beams, Scale.

Scissors, Fluting. 45¢**Scrapers—**

Adjustable Box Scraper (S. R. & L. Co.) \$6.00 30¢/10¢
 Box, 1 Handle 1 doz \$2.25/\$2.50
 Box, 2 Handle 1 doz \$3.00/\$3.25
 DeLancey Box and Ship 20¢/10¢
 Foot 50¢/10¢/50¢
 Ship, Common 1 doz \$3.50 net
 Ship, R. I. Tool Co. 10¢

Screen Window and Door

Frames—See Frames

Screw Drivers—

See Drivers, Screw.

Screws—**Bench and Hand—**

Bench, Iron 55¢/10¢/55¢/10¢/10¢
 Bench, Wood, Beech 1 doz \$2.25
 Bench, Wood, Hickory 20¢/10¢
 Hand, Wood 25¢/10¢/25¢/10¢/25¢
 Hand, Grand Rapids, list 35¢

Coach, Lag and Hand-Rail—

Lag, Blunt Point, list Jan. 1, 1890 80¢/80¢/10¢
 Coach and Lag, Gimlet Point, list Jan. 1, 1890 80¢/80¢/5¢
 Hand Rail, Sargent's 70¢/10¢
 Hand Rail, H. & B. Mfg. Co. 70¢/10¢/75¢
 Hand Rail, Am. Screw Co. 75¢

Jack Screws—

Jack Screws, Millers Falls list, 50¢/50¢/10¢
 Jack Screws, P. S. & W. 35¢
 Jack Screws, Sargent 70¢
 Jack Screws, Stearns' 40¢/40¢/10¢

Cork—

Humason & Beckley Mfg. Co. 40¢/10¢/50¢
 Williamson's 33¢/40¢/33¢/5¢
 Detroit Cork Screw Co. 33¢/5¢

Machine—

Flat Head Iron 65¢
 Round Head Iron 60¢

Wood—

List January 1, 1891.
 Flat Head Iron 70¢
 Round Head Iron 65¢
 Flat Head Brass 70¢
 Round Head Brass 65¢
 Flat Head Bronze 70¢
 Round Head Bronze 65¢
 Rogers' Drive Screws 82¢/4¢

Scroll Saws—See Saws, Scroll.**Scythes—**

Grain 40¢/50¢/40¢/10¢
 Grass 40¢/10¢/50¢

Scythe Snaths—

See Snaths, Scythe.

Sets—

Awl and Tool—
 Aiken's Sets, Awls and Tools 60¢/60¢/5¢
 No. 20, 1 doz 10.00 60¢/60¢/5¢
 Fray's Ad. Tool Hds., Nos. 1, 1 1/2, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 95

Snaps, Harness, &c.

Anchor (T. & S. Mfg. Co.)	50¢
Finch's (Eristol)	50¢
Hotchkiss	10¢
Andrews	50¢
Sargent's Patent Guarded	70¢
German, new list	40¢
Covert	50¢
Covert, New Patent	50¢
Covert, New R. E.	80¢
Covert Spring	80¢
Covert's Saddlery Works' Triumph	83¢
John Protz Snaps	75¢

Snaths—

Scythe	50¢
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Soldering Irons—See *Irons, Soldering.***Splittoons, Cuspidors, &c.****Standard Fiberware—**

Cuspidors, 8½-inch, ½ doz., No. 5, 8; No. 6, 8.	
Splittoons, Daisy, 8-inch, No. 1, 4; 10 and 11 inch, 8.	

Spoke Shaves—See *Shaves, Spoke.***Spoke Trimmers—**See *Trimmers, Spoke.***Spoons and Forks—****Tinned Iron—**

Basting, Cen. Stamp. Co.'s list	70¢
Solid Table and Tea, Cen. Stamp. Co.'s list	70¢
Buffalo, S. S. & Co.	33¢

Silver Plated—

months or 5¢ cash 30 days:

Meriden Brit. Co., Rogers	40¢
C. Rogers & Bros.	40¢
Rogers & Bros.	40¢
Reed & Barton	40¢
Wm. Rogers Mfg. Co.	40¢
Simpson, Hall, Miller & Co.	40¢
Holmes & Edwards Silver Co.	40¢
L. Boardman & Son	50¢

Miscellaneous—

Holmes & Edwards Silver Co.	50¢
No. 37 Mexican Silver	50¢
No. 30 Silver Metal	50¢
No. 24 German Silver	50¢
No. 60 Nickel Silver	50¢
No. 49 Nickel Silver	50¢
Wm. Rogers Mfg. Co.	50¢
Rogers' Silver Metal	50¢
18¢ Rogers' German Silver	50¢
22¢ Rogers' Nickel Silver	50¢
German Silver	50¢
German Silver, Hall & Elton	50¢
Nickel Silver	50¢
Britannia	50¢
Boardman's Nickel Silver, list July 1, 1891	50¢
Boardman's Britannia Spoons	50¢
lots	50¢

Springs—

Torrey's Rod, 39 in.	50¢
Warner's No. 1, ½ doz. \$1.50; No. 2, \$3.40	
Gem (Coil), list April 19, 1886	20¢
Star (Coil), list April 19, 1886	20¢
Victor (Coil)	60¢
Champion (Coil)	60¢
Cowell's, No. 1, ½ doz. \$1.50; No. 2, \$1.50	
Rubber, complete, ½ doz. \$4.50; 55¢	
Phoenix	39¢

Carriage, Wagon, &c.—

Multiple, Concord, Platform and Half	
Roll	
60¢	
Old's Bolster Springs	25¢

Squares—

Steel and Iron	80¢
Nickel-Plated	80¢
Try Square and T Bevels	60¢
Diston's Try Square and T Bevels	50¢
Winterbottom's Try and Miter	30¢
Starrett's Micrometer Calliper Squares	25¢
Avery's Flush Bevel Squares	25¢
Avery's Bevel Protractor	50¢

Squeezers—

Fodder—	
Blair's	50¢
Blair's "Climax"	50¢

Lemon—

Orcelain Lined, No. 1	25¢
Wood, No. 2	30¢
Wood, Common	30¢
Dunlap's Improved	30¢
Sammls	30¢
Jennings' Star	30¢
The Boss	30¢
Dean's	30¢
Little Giant	30¢
King	30¢
Hotchkiss Straight Flash	30¢
Silver & Co., Glass	30¢

Standard Fiber Ware—See *Ware, Standard Fiber.***Staples—**

Barbed Blind, ¼ in. and larger	7¢
Barbed Blind, ½ in.	8¢
Fence Staples, Galvanized	8¢
Fence Staples Plain	8¢
Grand Crossing Tack Co.'s list	7¢

Steelyards

40¢

Stocks and Dies—

Blacksmith's	
Waterford Goods	35¢
Butterfield's Goods	35¢
Lightning Screw Plate	25¢
Beece's New Screw Plates	25¢
Reversible Ratchet	30¢
Gardner	25¢
Green River	25¢

Stops, Bench—

Morrill's, ½ doz., Nos. 1, \$9.50; 2, \$12.00	
Hotchkiss's	50¢
Werton's, No. 1, \$10; No. 2, \$9, 25¢	

McGill's, ½ doz. \$3.	10¢
Cincinnati	25¢
Terrill's Nos. 1 and 2, ½ doz., \$3; No. 3, \$3.60	30¢

Stone—Stones, Grind—See *Grindstones.***Scythe Stones—**

Pike Mfg. Co., list April 12, 1892	83¢
Cleveland Stone Co., list No. 1882	33¢

Oil Stones, &c.—

Pike Mfg. Co.	
Hindustan No. 1, ½ doz.	8¢
Sand Stone	5¢
Turkey Oil Stone, 4 to 8 in.	40¢
Turkey Slips	20¢
Lily White Washita	60¢
Rosy Red Washita	60¢
Washita Stone, Extra	60¢
Washita Stone, No. 1	40¢
Washita Stone, No. 2	30¢
Lily White Slips	90¢
Rosy Red Slips	90¢
Washita Slips, Extra	80¢
Washita Slips, No. 1	70¢
Arkansas Stone, No. 1, 3 to 5 in.	52¢
Arkansas Stone, No. 1 ½ to 3 in.	53¢
Lake Superior	13¢
Lake Superior Slips	20¢

Stove Polish—See *Polish, Stove.***Stretchers Carpet—**

Cast Steel, Polished	22¢
Cast Iron, Steel Points	75¢
Socket	17¢
Bullard's	25¢

Strops, Razor—

Genuine Emerson	60¢
Imitation	20¢
Torrey's	20¢
Badger's Belt and Com.	20¢
Lamont Combination	40¢
Jordan's Pat. Padded, list Nov. 1, '89, 50¢	
Electric Cutlery Co.	Net
Campbell Cutlery Co.	Net

Stuffer, Sausage—

Miles' Challenge, ½ doz. \$20.	50¢
Perry, ½ doz., No. 1, \$15.00; No. 0, \$21.00	
Draw Cut No. 4, each \$30.00	20¢
Enterprise Mfg. Co., list Jan 17, '93, 25¢	
Silver's	40¢

Sweepers, Carpet and Lawn—

Bissell No. 5	17¢
Bissell No. 8	17¢
Bissell, Grand	38¢
Standard	24¢
Domestic	21¢
Domestic, No. 2	22¢
Grand Rapids	24¢
Crown Jewel, No. 1	18¢
No. 3	20¢
No. 5	25¢
Improved Parlor Queen	27¢
Nickel	27¢
Japanned	24¢
Exterior	22¢
Garland	23¢
Parlor Queen	23¢
Housewife's Delight	15¢
Ladies' Friend	15¢
Ladies' Friend No. 2	16¢
Advance	18¢
Our Leader	19¢
Triumph	20¢
Goshen	21¢
Supreme	22¢
Easy	22¢
Gilt Edge	24¢
Acme	28¢
Imperial	36¢
Grand Republic	36¢
Banner	22¢
The Star	21¢
Reliable	22¢
The Rapid	22¢
The Own	27¢
Model	27¢
Goshen Sweeper Company	27¢
Rapids, Mich., make the following rebates:	
5 dozen in 6 months	10¢
10 dozen in 6 months	20¢
20 dozen in 6 months	30¢
Exception on L.P., when 10 dozen price is \$18.50, and 25 dozen \$18.00.	

Lawn—

Thompson Mfg. Co.	30¢
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Swings—

Davies Lawn	25¢
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Tacks, Brads &c.—

list October 19, 1889. Old established straight weights. Short Weight goods are sold at lower prices.

Carpet Tacks—	
American, Blued	60¢
American, Tin'd and Cop'd	70¢
Steel, Blued and Blued	60¢
Steel, Tinned and Cop'd	70¢
Swedes Iron, Blued	72¢
Swedes Iron, Tinned	75¢
American Iron Tacks, Domestic	60¢
Swedes Iron Tacks—	
S. S., Blued	60¢
S. S., Tinned	70¢
Lanc., Blued	60¢
Lanc., Tinned	60¢
Gimp and Lace Tacks—	
S. S., Blued	62¢
S. S., Tinned	60¢
Lanc., Blued	55¢
Lanc., Tinned	55¢
Basket and Trimmers' Tacks	60¢
Lanc.	52¢
S. S.	60¢
Hungarian Nails	60¢
Leathered and Patent Brads	55¢
Brush Tacks, S. S.	10¢
Looking Glass Tacks, S. S.	35¢
Picture-Frame Points, S. S.	35¢
Finishing Nails	60¢
Trunk and Count Nails—	
Blued	62¢
Tinned or Coppered	60¢
Basket Nails	60¢
Chair Nails	52¢
Cigar Box Nails	45¢
Tin Cap'd Nails	50¢

Miscellaneous—

Double Point	90¢
Wire Carpet Nails	50¢
Claw Carpet	40¢
Bonnie Blue	50¢

Bill Nye Brad Box	40¢
Parisian Gilt Nails, cartoon	50¢
Home Tacks, No. 80, ½ case (12 cartons), \$38.00; No. 100, ½ case (12 cartons), \$72.00	
Home Nails, No. 200, ½ case (12 cartons), \$30.00; No. 400, ½ case (12 cartons), \$50.00	
Upholsterers' Nails	50¢

Wire Brads and Nails

Steel-Wire Brads, R. & E. Mfg. Co.'s list	50¢
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See also *Nails, Wire.***Tanks, Oil—**

Emerald, S. S. & Co.: 30-gal. \$8.75; 60-gal. \$11 each	50¢
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Tapes, Measuring—

American	40¢
Spring	40¢
Chesterman's, Regular list	25¢

Thermometers—

Tin Case	80¢
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Thimble Skeins—See Skeins.**Ties, Bale—Steel.**

Standard Wire, list	50¢
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Tinners' Shears, &c —See *Shears, Tinners' &c.***Tinware—**

Stamped, Japanned and Plead, list Jan 20, 1887	70¢
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Tire Benders, Upsetters, &c.—See Benders and Upsetters, Tire.**Tobacco Cutters—**See *Cutters, Tobacco.***Tools—****Coopers'—**

Bradley's	20¢
Barton's	20¢
L. & I. J. White	20¢
Albertson Mfg. Co.	25¢
Beatty's	30¢
Sandusky Tool Co.	30¢
Shaves Cincinnati Tool Co.	20¢

Lumber—

Ring Peavies, "Blue Line"	20¢
Ring Peavies, Common	18¢
Steel Socket Peavies	21¢
Mail Iron Socket Peavies	19¢
Cant Hooks, "blue Line"	16¢
Cant Hooks, Common Finish	14¢
Cant Hooks, Mail Socket Clasp, "Blue Line" Finish	16¢
Cant Hooks, Mail Socket Clasp, Common Finish	14¢
Cant Hooks, Clip Clasp, "Blue Line" Finish	14¢
Cant Hooks, Clip Clasp, Common Finish	12¢
Hand Spikes	6¢
Pike Poles, Pike & Hook	12¢
11.50; 14 ft., \$12.50; 16 ft., \$14.50; 18 ft., \$17.50; 20 ft., \$21.50	
Pike Poles, Pike only	12¢
10.00; 14 ft., \$11.00; 16 ft., \$13.00; 18 ft., \$16.00; 20 ft., \$20.00	
Pike Poles, not ironed	12¢
\$6.00; 14 ft., \$7.00; 16 ft., \$9.00; 18 ft., \$12.00; 20 ft., \$16.00	
Setting Poles	12¢
14 ft., \$15.00; 16 ft., \$17.00	
Swamp Hooks	18¢

Saw—

Atkins', new list	40¢
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Transom Lifters—See *Lifters, Transom.***Traps—****Game—**

Newhouse	40¢
Onida Pattern	70¢
Game, Blake's Patent	40¢

Mouse and Rat—

Mouse Wood, Choker, ½ doz holes, 9@10¢	
Mouse, Round Wire	15¢
Mouse, Cage Wire	25¢
Mouse, Catch-em-alive	25¢
Mouse, Baited	15¢
Rat, Decoy	10¢
Ideal	10¢
Cyclone	10¢
Hotchkiss Metallic Mouse, 6-hole traps	35¢
doz., 75¢; in full cases, 50¢	
Hemlock Imp. Rat Killer	18¢
Hotchkiss New Rat Killer	15¢
Schuyler's Rat Killer	15¢
Dandy	15¢

Trlrs—

Butter and Cheese	25¢
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Trimmers, Spoke—

Bonney's	10¢
Stearns	10¢
Ives', No. 1, \$15.00; No. 2, \$12.00	
Douglas	55¢
Cincinnati	25¢

Trowels—

Lothrop's Brick and Plastering	20¢
Reed's Brick and Plastering	15¢
Diston's Brk and Plastering	25¢
Peace's Plastering	25¢
Clemens & Maynard's	20¢
Rose's Brick	15¢
Worrall's Brick and Plastering	20¢
Garden	70¢
Cleaver's Angle Trowel, ½ gro, No. 1, \$36; No. 2, \$30; No. 3, \$15. net @ 10%	

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list	40¢
Thomson Mfg. Co.	40¢
Barnes' Barrel Trucks	40¢

Tubes Boiler—See *Pipe***Twine—****Flax Twine—**

PAX TOWNS		P. C. B.	
No. 9, ¼ and ½ B. Balls	.....	25	31
No. 12, ¼ and ½ B. Balls	.....	30	30
No. 15, ¼ and ½ B. Balls	.....	30	30
No. 24, ¼ and ½ B. Balls	.....	30	30
No. 36, ¼ and ½ B. Balls	.....	18	30
No. 264 Mattress, ¼ and ½ B. Balls	.....	50	50
Chalk Line, Cotton, ¼ B. Balls	.....	35	35
Mason Line, Linen, ¼ B. Balls	.....	55	55
2-Ply Hemp, ¼ and ½ B. Balls (Spring Twine)	.....	15	15
3-Ply Hemp, 1 B. Balls	.....	16	16
3-Ply Hemp, ¼ B. Balls	.....	15	15
Cotton Wrepping, 5 Balls to m.	.....	16	16
2, 3, 4 and 5 Ply Jute, ¼ B. Balls	.....	10	10
Wool	.....	65	65
Cotton Mops, 6, 9, 12 and 15 # to doz.	.....	18	14
W	.....	18	14

Whips

American Whip Co.	Length.	4 1/2	5	5 1/2	6	6 1/2	7	7 1/2	8 ft.
X. L. Whalbone Driving...	\$18.00	20.00	22.00	24.00	27.00	30.00	33.00	36.00	
Euroka, Two-thirds Whalbone...			15.00	16.50	18.00	20.00			
Bull Bone, Half-length Whalbone...			11.00	12.00	13.00	15.00			
American Standard...	8.00	8.50	9.50	10.50	12.00	13.50	15.00	16.50	
True Grip, Raw Hide Center...	6.00	6.00	6.50	7.00	7.50	9.00			
New Name, Stocked Java, Black and Wine Colors...				8.00					
Americus, 99 Pen Whip...				6.00					
Gents' Light Driving No. 111...				6.00					
Gents' Light Driving No. 106...				5.00					
Hand-made Stocked Java No. 103...				8.75	4.00				
A large variety of cheaper grades...									\$2.00 to \$3.00
Team Whips...									\$2.00 to \$7.50
Toy Whips...									\$2.50 to \$12.00
Hardware Assortment, 10/American, 75 Whips for \$50.00.									

Wire and Wire Goods—

Iron—

Market,	Br. & Ann., Nos. 0 to 18.	Extra 5@10% often given
Br. & Ann., Nos. 0 to 18.	75¢@10¢	often given
Cop'd, Nos. 0 to 18.	75¢@10¢	and net
Galv., Nos. 0 to 18.	75¢@10¢	prices often
Tin'd, Tin'd list, Nos. 0 to 18.	70¢@70¢@10¢	made on large lots.

Stone,	Br. and Ann'd, Nos. 16 to 18.	Extra 10% often given.
Br. and Ann'd, Nos. 16 to 18.	80¢	often given.
Bright and Ann'd, Nos. 16 to 18.	80¢	often given.
Br. and Ann'd, Nos. 27 to 36.	85¢@10¢	often given.
Tinned	65¢@10¢	often given.
Tinned Broom Wire, 18 to 21.	44¢	often given.
Galvanized Fence	75¢@10¢	often given.
Brass, list Jan. 18, 1894.	40¢@5¢	often given.
Copper, list Jan. 18, 1894.	40¢@5¢	often given.
Annealed Wire on Spools.	60¢	often given.

Malin's An'led & Tin'd on Spools... 50¢@5¢
 Malin's Brass and Cop. on Spools... 50¢@5¢
 Tate's Spooled, Tin'd & Annealed... 60¢@5¢
 Tate's Spooled Cop. and Brass... 50¢@5¢
 Cast Steel Wire... 50¢@5¢
 Stub's Steel Wire... 50¢@5¢
 Steel Music Wire, 12 to 30, imported... 50¢@5¢

Wire Clothes Line, see Lines.
 Wire Picture Cord, see Cord.

Bright Wire Goods—

Standard list... 85¢@85¢@10¢

Wire Cloth and Netting—

Painted Screen Cloth 100 ft. \$1.75@2.00
 Galvanized Wire Netting... 75¢@75¢@10¢

Wire, Barb—

See Trade Report.

Wire Rope—See Rope, Wire.

Wrenches—

American Adjustable	40¢
Baxter's Adjustable "S"	40¢@10¢@50¢
Baxter's Diagonal	60¢
Coe's Genuine	60¢@5¢
Coe's "Mechanics"	50¢@10¢@3¢
Girard Standard	65¢@10¢@70¢
Lamson & Sessions' Engineers'	60¢@10¢
Lamson & Sessions' Standard	70¢@10¢
P. S. & W. Agricultural	75¢@10¢@80¢
Girard Agricultural	75¢@10¢@80¢
Lamson & Sessions' Agric'l.	75¢@10¢@80¢
W. & B. Diamond	75¢@10¢@80¢

Bemis & Call's:	
Pat. Combination Bright	40¢@5¢
Pat. Combination Black	40¢@10¢
Merrick's Pattern	45¢
Briggs' Pattern	30¢@10¢
Cylinder or Gas Pipe	45¢@5¢
No. 8 Pipe	55¢
Alken's Pocket (Bright)	\$6.00, 50¢@1¢
The Favorite Pocket	\$4.00, 4¢
Webster's Pat. Combination	25¢
Boardman's	80¢
Always Ready	85¢@5¢
Aligator	50¢
Donohue's Engineer	20¢@10¢
Eagle	50¢@10¢
Acme, Bright	60¢@2¢
Acme, Nickel	40¢@2¢
Hercules	70¢@2¢
Walker's	65¢@2¢
Cincinnati Brace Wrenches	25¢@10¢
Taft's Vise Wrench	55¢@10¢@25¢

Wringers, Clothes—

Ann. Wringer Co.'s list, Jan. 2, '93.	cash
Colby Wringer Co., list Sept. 1, '91.	cash
Lovell Mfg. Co., list Jan. 1, 1892.	cash
Peerless Mfg. Co., list Feb. 1, 1892.	cash
National Wringer & Mfg. Co., list June 1, 1892.	cash

Wrought Goods—

Staples, Hooks, &c., list March 17, 1898, 85¢@10¢@55¢@15¢

Paints, Oils and Colors.—Wholesale Prices.

Animal and Vegetable Oils—

Linseed, City, raw, per gal.	50
Linseed, City, boiled	53
Linseed, Western, raw	50
Lard, City, Extra Winter	85
Lard, City, Prime	85
Lard, City, No. 1	85
Lard, Western, prime	83
Cotton-seed, Crude, prime	46
Cotton-seed, Crude, off grades	40
Cotton-seed, Summer Yellow, prime	51
Cotton-seed, Summer Yellow, off grades	45
Sperm, Crude	97 1/2
Sperm, Natural Spring	97
Sperm, Bleached Spring	100
Sperm, Natural Winter	100
Sperm, Bleached Winter	105
Whale, Crude	55
Whale, Natural Winter	55
Whale, Bleached Winter	58
Whale, Extra Bleached	59
Sea Elephant, Bleached	59
Menhaden, Crude, Sound	40
Menhaden, Crude, Southern	42
Menhaden, Light Pressed	42
Menhaden, Bleached W'ter	45
Menhaden, Extra Bleached	48
Tallow, City, prime	60
Tallow, Western, prime	60
Cocoonut, Ceylon	64
Cocoonut, Cochiti	74
Cod, Domestic	38
Cod, Foreign	42
Red Elaine	44
Red Saponified	56
Bank	41
Straits	41
Olive, Italian, bbls.	63
Neatsfoot, prime	80
Palm, prime, Lagos	74

Cylinder, dark, filtered	10
Paraffine, 23 1/2 to 24 gravity	11
Paraffine, 25 gravity	10
Paraffine, 28 gravity	10
Paraffine, red	10 1/2

Paints and Colors—

Barytes, Foreign, 10 tons	\$22.00
Barytes, Amer. floated	\$20.00
Barytes, Amer. No. 1	\$18.00
Barytes, Amer. No. 2	\$15.00
Barytes, Amer. No. 3	\$12.00
Blue, Celestial	40
Blue, Prussian	25
Blue, Ultramarine	8
Brown, Spanish	1 1/2
Brown, Vandyke, Amer.	3
Brown, Vandyke, English	6
Carmine, No. 40, in bulk	2.75
Carmine, No. 40, in boxes or barrels	2.85
Carmine, No. 40, in ounce bottles	3.75
Chalk, in bulk	2.40
Chalk, in bbls.	33
China Clay, English	13.00
Cobalt Oxide, prep'd	9.00
Cobalt Oxide, black	1.90
Cobalt Oxide, black	1.96
Green, Paris, in bulk	10
Green, Paris, 170 to 175	10 1/2
Green, Paris, small pack	12
Green, Chrome, ordinary	6
Green, Chrom., pure	22
Lead, Eng., B.R. white	8 1/2
Lead, Amn. white, dry or in oil	7
Kegs, lots less than 500 lb.	6 1/2
Kegs, lots 500 lb. to 5 tons	6 1/2
Kegs, lots 5 tons to 12 tons	6 1/2
Kegs, lots 12 tons and over	6 1/2
Lead, White, in oil, 2 1/2 lb. tin	1
Lead, White, in oil, 1 to 5 lb. as sorted tins, add to keg price.	1
Lead, Red, bbls. and 1/2 bbls.	6
Lead, Red, kegs	6 1/2
Litharge, kegs	37 1/2
Litharge, bbls. and 1/2 bbls.	6

TERMS, &c.—Lead and Litharge.—On lots of 500 lb. or over, 60 days' time or 2 1/2 % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle	1.35
Ocher, French Washed	1 1/2
Ocher, German Washed	1 1/2
Ocher, American	1 1/2
Orange Mineral, English	8 1/2
Orange Mineral, French	10
Orange Mineral, German	8 1/2
Orange Mineral, American	8 1/2
Paris White, English Cliff	1.00
Paris White, American	65
Red, Indian, English	5 1/2
Red, Indian, American	2
Red, Turkey	9
Red, Tuscan	9
Red, Venetian, American	1.00
Red, Venetian, English	1.20
Sienna, Italian, Burnt and Powd.	4
Sienna, Ital., Burnt Lumps	1 1/2
Sienna, Ital., Raw, Powd.	4 1/2
Sienna, Ital., Raw, Lumps	1 1/2
Sienna, American, Raw	1 1/2
Sienna, American, Burnt and Powd.	1 1/2
Talc, French	1 1/2
Talc, American	1 1/2
Terra Alba, Fr'ch	95
Terra Alba, English	70
Terra Alba, American No. 1	65
Terra Alba, American No. 2	45
Umber, Turkey, Burnt and Powd.	3 1/2
Umber, Turkey Bnt. Ln.	2 1/2
Umber, Turkey, Raw and Powd.	3 1/2
Umber, Turkey, R/w Amer.	1 1/2
Yellow, Chrome	10
Vermilion, American Lead	11 1/2
Vermilion, Quicks'er, bulk	57
Vermilion, Quicks'er, bags	58
Vermilion, Quicksilver sm't	62
Vermilion, English Import	85
Vermilion, Imitation, Eng.	8
Vermilion, Trieste	90
Vermilion, Chinese	92 1/2
Whiting Common	37 1/2
Whiting Gliders	45

Zinc, American, dry	4 1/2
Zinc, French, Red Seal	7 1/2
Zinc, French, Green Seal	9
Zinc, French, V. M. X.	7
Zinc, Antwerp, Red Seal	7 1/2
Zinc, Antwerp, Green Seal	7 1/2
Zinc, German, L. Z. O.	6 1/2
Zinc, V. M. in Poppy Oil, G.	10 1/2
lots less than one ton	11 1/2
lots of 1 ton and over	10 1/2
lots of less than 1 ton	10 1/2
lots of 1 ton and over	10 1/2
Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1 1/2; 25 bbls. 2 1/2; 50 bbls. 4 1/2. No discount allowed on less than bbl. lots.	

Colors in Oil—

Black, Drop, Frankfurt	25
Black, Drop, English	12
Black, Drop, Domestic	7
Black, Lampblack, Best	20
Black, Lampblack, Common	7
Black, Ivory	8
Blue, Chinese	35
Blue, Prussian	20
Blue, Ultramarine	12
Brown, Vandyke	7
Green, Chrome	18
Sienna, Raw	7
Sienna, Burnt	7
Umber, Raw	7
Umber, Burnt	7

Putty—

In barrels and 1/2 bbls.	.013¢
In tubs	.013¢
In tins	.013¢
In bladders	.013¢

Spirits Turpentine—

In regular bbls.	30 1/2¢
In machine bbls.	31

Glue—

Low Grade	8
Cabinet	12
Medium White	13
Extra White	17
French	10
English	10
Irish	12

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